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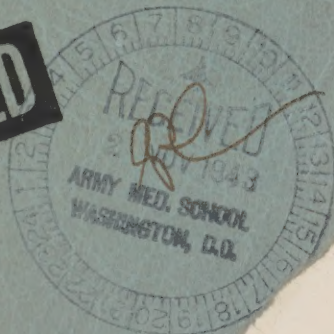
ARMY SERVICE FORCES

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Annual Report

For The Fiscal Year 1943

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ANNUAL REPORT
of the
ARMY SERVICE FORCES
for the fiscal year
1943

WAR DEPARTMENT

Army Service Forces
Washington, D. C.

15 August 1943

MEMORANDUM FOR: The Under Secretary of War
The Chief of Staff

I transmit herewith the Annual Report of the Army Service Forces for the fiscal year ending June 30, 1943.

The fiscal year 1943 brought new problems to the Army Service Forces.

In the field of procurement, the principal concern during 1942 was the construction or conversion of productive facilities to war manufacture. In 1943 productive facilities largely ceased to be a bottleneck. Deliveries of ground type munitions began to realize the full promise of American mass production. The first great difficulty in procurement was one of channeling raw materials in an orderly manner to war contractors and subcontractors.

The problem of raw materials was also a problem in War Department relations to the War Production Board. The War Department's fears that the Production Requirements Plan would prove administratively unfeasible were borne out in the third quarter of 1942. In the meantime the new priority ratings for specific quantities of war goods to be acquired in a particular time period went into effect. Almost simultaneously the War Production Board announced a new scheme of materials control—the Controlled Materials Plan—and took steps to put day-to-day relations with the War Department on a systematic basis. Both agencies worked together in planning the methods for putting the Controlled Materials Plan into effect.

With increasing materials shortages, the problem of production scheduling came to the fore. The most effective use of all materials was indispensable if completed articles were to be produced instead of many half-finished items. Production scheduling was therefore closely tied to materials control. Drawing the line between the two, and between the respective fields of authority of the War Production Board and the War Department, was not easy. It was done, however, and done satisfactorily. Moreover, through the Production Executive Committee set up by the War Production Board, close, continual relations between the Army Service Forces and the War Production Board on production questions has been achieved.

In the fiscal year 1942 careful attention had been given to the development of adequate data on War Department requirements for munitions. These data were used in setting procurement objectives and in presenting raw materials needs to the War Production Board. In 1943 these requirements had to be further adjusted because of production limitations and consequent changes in strategic plans. The over-all readjustments were

made by the Joint Chiefs of Staff within total productive limits set by the War Production Board. Thus production capabilities and strategic plans were effectively tied together.

The major purchasing problem of the Army Service Forces during the fiscal year 1943 was the renegotiation of contracts. The advent of large scale production afforded an opportunity to reexamine the pricing of war materiel. The Office of Price Administration recognized the primary military concern with the price of military supplies and equipment. As its contribution to economic and industrial stability, the War Department began extensive contract renegotiation wherever there was reason to believe that prices were excessive. At the same time, better cost data permitted more careful pricing of new contracts than had been possible in the year ending June 30, 1942, when production was being built up to desired levels of output.

Termination of contracts also became a new concern of the Army Service Forces during 1943. As new items of equipment were designed and as adjustments were made in procurement programs, some contracts had to be cancelled. Every effort was made, first, to save the manufacturer from loss when a contract was terminated, and second, to keep the facility in war production if it could turn out needed items. At the same time, the interests of the government had to be protected in all contract settlements.

The major production problems during the year were encountered in the procurement of radio and communications equipment, and in harbor craft. Both were held up by critical shortages in component parts and in skilled labor. The situation was much improved by the end of the year. In spite of many production obstacles, the manufacture of steel cartridge cases in place of brass cases was realized during the year.

The shortages in materials made it necessary to conserve the military use of critical materials in every possible way. Many Army specifications were substantially changed during the year. Particular attention was given to reducing the Army's demands for rubber and to conserving the use of rubber products. Careful data on requirements were presented to the Office of the Rubber Director; new priorities control helped the Army Service Forces to obtain its requirements.

The Army Service Forces also worked with the Office of Petroleum Administrator for War in the purchase of gasoline and lubricants so as to disrupt depleted Eastern Coast supply as little as possible. In spite of the cost in transportation time and hence in available overseas supply, tankers were diverted to southern and gulf ports when inland storage conditions threatened to interfere with maximum oil and gasoline production.

Although military requirements were only a small percentage of total national food stocks, the Army Service Forces during the year took definite steps to eliminate wastage in food consumption and to reduce food demands. The Army's food program should realize substantial savings in the coming year.

With large scale deliveries by manufacturers, new problems in the distribution of supplies came to the fore. Improved methods of packaging and

of handling supplies were sought. At the same time new attention was given to reducing storage and handling costs.

The available supply of military equipment still was insufficient to meet all needs. An improved stock control system was developed to prevent excess inventories from developing at posts. Also, the new system permitted more accurate computing of replacement requirements.

Maintenance of equipment became increasingly important during the year. The longer each item remained serviceable, the more equipment it was possible to put into the hands of troops in training. Preventive maintenance in particular was emphasized in 1943.

Transportation problems continued to be the main obstacle in transporting men and supplies overseas. The steady increase in available shipping and the reduced menace of enemy action enabled larger and larger monthly shipments overseas. The length of communication lines, however, was a limiting factor that could not be readily surmounted. Also, troop carrying capacity has been less than cargo capacity. By the end of the year a balance between the two was in prospect.

The planning of military operations was not freed from logistical factors by the increased supply and improved shipping condition in 1943, but attained greater flexibility. The movement of a large British and American force from England, and another American force from the United States to North Africa in November, 1942, was the first large scale test of our supply and transport organization. The support of the operation after its initial landing was an even greater task. Both were performed as desired.

The supply of other theaters all over the world was no less difficult in 1943 than in 1942, but more and more men and supplies were sent against the Japanese. In particular, new means of getting supplies to China had to be found.

The activation of Army Service Forces trained units was speeded up during the year in order to meet overseas needs. It was not easy to provide units with personnel fully competent to man highly complex communications equipment or to repair and maintain this and all other equipment. Operation could be taught more readily than the repair of modern instruments of war. At the same time that American industry was expanding and demanding skilled workmen in large number, the Army Service Forces was likewise needing them. Recruitment of experienced engineers, doctors, transportation men and the training of technically competent men were primary problems during 1943. Sometimes needs were so urgent that units had to be sent overseas before they were fully trained. American industrial establishments and civilian institutions cooperated in providing the technical training needed by ASF troops.

The personnel services performed by the Army Service Forces for the War Department encountered new difficulties during the year. The action of Congress in making 18 and 19 year old men subject to selective service led the War Department to establish the Army Specialized Training Program to provide technical training for some of these and other men. The administration of this program fell to the Army Service Forces. Men were

selected for this training throughout the Army in accordance with estimated needs for certain technical specialties. Colleges and universities were selected to participate in the program. All these actions entailed new procedures for the Army, but procedures that by the end of the year were proving a success.

The personnel objective for the Women's Army Auxiliary Corps, newly founded at the end of the preceding year, was enlarged to the statutory limitation. Recruitment of the desired numbers of women fell off during the last six months of the year and raised the question how the goal of 150,000 women might be reached. Training proceeded satisfactorily, and women began to appear in the field. They so demonstrated their usefulness that demands exceeded the probable numbers that could be raised and trained. Congress took the necessary action during the year to make the Corps a component of the Army of the United States with the new name of Women's Army Corps.

Production of a notable series of films depicting the origins of the war was begun in order better to inform the troops about the reasons for the war. Recreational and educational facilities for troops were expanded.

The recruitment of officers from civilian life, except for chaplains, doctors, and engineers, came to a virtual halt during the second half of the year. The numbers of civilian employees of the Army Service Forces grew to over 1,000,000 persons by June 30, 1943. Extensive efforts were made to replace men by women, to increase the employment of minority groups, and to improve the efficiency of all workers through training. Turnover remained high. Wages paid in various parts of the country to ungraded employees were standardized. Employee relations were put on a firm basis of understanding and negotiation. Assistance was rendered contractors in meeting the housing and transportation difficulties of their workers. If possible, new contracts were not awarded in areas of acute labor shortage.

A program of pre-induction training in American schools was worked out by the Army Service Forces and the U. S. Office of Education. Students were encouraged to study the technical subjects for which the Army need was so great.

Manpower difficulties were so pronounced that at the end of the year the Army Service Forces brought all its operating personnel, both military and civilian, under careful control. Total numbers were to be reduced under the new scheme.

Improvements continued to be made during the year in handling court martial cases. Also, rehabilitation centers were created to care for prisoners who might be reclaimed for military duty. Legal assistance was made available to soldiers in caring for their personal problems. Claims procedures were greatly speeded up.

Military police supplemented the police forces in various communities and patrolled all through-trains. The conduct of military personnel everywhere definitely improved. Troops called upon to assist in the one major community disturbance of the year restored order quickly and efficiently. This experience attested the discipline of military police units.

V-mail was introduced during the year to speed communication between the United States and overseas as well as to reduce shipping space. Army post exchange practices were regularized in order to prevent unfair competition with retail establishments and to provide the most satisfactory service to military personnel.

Many improvements in organizational structure were made during the year. Nine Service Commands were created throughout the United States to handle on a geographical basis the administrative work of the Army Service Forces and to operate camps, posts, and stations used by Army Ground Forces. Staff agencies were brought together on a functional basis to permit the greatest possible coordination of their activities. The reporting system was standardized and unnecessary reports eliminated. Much emphasis was placed upon maximum possible decentralization of authority to officials in the field. Cumbersome procedures were simplified.

The fiscal operations of the Army Service Forces were particularly streamlined in order that bills might be paid promptly and that the burden of handling the large financial transactions of war-time might be performed without undue overhead.

These were some of the problems the Army Service Forces faced in the fiscal year 1943. More details about them and other concerns are to be found in the report that follows.

Ahead in the coming fiscal year remained many improvements still to be made. The movement of men and supplies must be speeded up to hasten the day of victory. Maintenance of equipment will become an increasing concern. The determination of spare parts requirements will be a new major problem in procurement. Conservation efforts cannot be relaxed.

The training of ASF troop units must be even more closely geared to the schedule for their activation and employment, so that only the most competent personnel is sent into the field.

The classification and assignment of officers and enlisted men demands greater attention and care. As induction slows down, as scarce categories of personnel increase rather than decrease, more effective use of available talents is indispensable. Manpower is no longer a limitless resource—either in the civilian or military category. Unnecessary work and time-consuming procedures must be cut out.

The morale of Army Service Forces personnel is not what it should be. Procurement, supply, and administration are not glamorous jobs. But their efficient performance is an indispensable contribution to the war effort. That fact must be forcefully brought home to all.

There is much yet to be done in improving administrative organization in order to perform all work more efficiently and more expeditiously.

The year ending June 30, 1943, saw the Army Service Forces getting into its stride. There was much left to be done.

BREHON SOMERVELL
Lieutenant General
Commanding

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INTRODUCTION

Originally created as the Services of Supply on March 9, 1942, the Army Service Forces received its new designation by War Department General Orders No. 14, March 12, 1943.

The Army Service Forces performed a wide variety of functions for the War Department. It developed and procured all military supplies except those peculiar to the Army Air Forces. It stored and issued these supplies. It constructed all buildings and other facilities owned by the War Department in the United States and at certain outlying bases. It transported men and supplies by rail within the United States and by ship to overseas destinations. It operated the communications system for the War Department. It inducted men into the Army, classified them, and assigned them to the Ground Forces, the Air Forces, and Service Forces itself. It watched over the health of the Army and provided hospital and medical services.

This enumeration only begins to suggest the work of the Army Service Forces. It was the lawyer for the War Department and the Army, and it was the policeman. It operated the army camps, posts, and stations in the United States where ground troops were housed. The facilities of such camps included posts exchanges, motion picture theaters, recreation rooms, and libraries. It kept all personnel records and provided office services to the War Department. It operated the Army Postal System. It kept the fiscal accounts for the War Department and disbursed funds.

The Army Service Forces recruited and trained women to displace men in non-combatant jobs. It recruited and trained chaplains. It ran the Army Specialized Training Program. Finally, it trained troop units to do particular phases of these jobs for combatant troops and for overseas theaters.

To perform these tasks the Army Service Forces was organized into Technical Services and Service Commands.

The seven Technical Services (before May 15, 1943, called Supply Services) bought or manufactured supplies, stored and issued them, and directed the training of troop units. These services were the Ordnance Department, Quartermaster Corps, Corps of Engineers, Medical Department, Signal Corps, Transportation Corps, and Chemical Warfare Service. Guns, ammunition, and automotive equipment were obtained by the Ordnance Department. Clothing, food, and general supplies were provided by the Quartermaster Corps. Construction supplies and equipment were purchased by the Corps of Engineers. The Medical Department bought drugs and other medical supplies, the Signal Corps communication equipment, and the Transportation Corps rail and harbor equipment. The Chemical Warfare Service provided gas masks, incendiary bombs, smoke, and chemical agents for use in chemical attack. In addition, the Transportation Corps moved men and supplies, and the Corps of Engineers constructed new facilities.

The ten Service Commands, organized geographically, performed personnel and administrative services and operated army posts. In their medical activities, Service Commands were supervised by the Surgeon General, in repairs and utilities by the Chief of Engineers, and in communications by the Chief Signal Officer.

Assisting the Commanding General of the Army Service Forces in directing all activities were staff divisions.

I

RESEARCH AND DEVELOPMENT

Procurement of material by the Army Service Forces necessarily was preceded by extensive research and development in order to achieve the desired military characteristics for each piece of equipment. While this development work was performed by the Army Service Forces, necessarily close contact at all times was maintained with Army Ground Forces and Army Air Forces. New types of equipment were not usually adopted for procurement until approved by a board representing the using arms and services.

Each of the seven Technical Services of Army Service Forces carried on extensive research and developmental work in order to devise new or improved weapons and equipment. This work expanded during the fiscal year as did other activities of the War Department. In 1942 total expenditures for research activities by the Army Service Forces were some 100 million dollars. In the fiscal year 1943 more than 140 million dollars was expended. The largest single program was that of the Ordnance Department, which was 100 percent greater in 1943 than in 1942. The second most extensive research program was that of the Signal Corps in the field of communications and radio equipment.

The outlay for research and development activities alone in 1943 was 50 percent greater than the annual average expenditure for military equipment by the War Department from 1934 to 1940. It was six times as great as the annual average expenditure for equipment in the years from 1927 to 1933.

The trend in research activity that began in the last half of the fiscal year 1942 was continued during 1943. The emphasis shifted from extensive research on many different projects, many involving fundamental questions, to intensive research on fewer projects. More attention was given to the improvement of existing weapons rather than to the search for new ideas.

The Requirements Division in Headquarters, Army Service Forces was the central clearing agency for research and development projects. In January, 1943, a monthly summary report on research and development was begun showing the status of all projects undertaken by each of the Technical Services.

Ordnance Department

In the first half of the fiscal year 1943 twenty-five new artillery items procured by the Ordnance Department for Army Ground Forces came into production. Among these were the 3-inch tank gun M7, the 4.5-inch field gun M1, the 8-inch howitzer M1, the 8-inch field gun M1, the 75mm. aircraft

cannon M4, the 76mm. tank gun M1, and the 75mm. howitzer M3 for mounting on motor gun carriage M8. In addition, manufacture was begun of a new artillery piece for airborne troops. This howitzer was lighter and more readily transported by plane than the ordinary model. Two new anti-aircraft guns were standardized during the year with performance characteristics superior to existing guns. One of these was put into immediate production. Another anti-aircraft gun, the 90mm. T2 was standardized as the M2. On a mount specially designed to permit firing from the wheels in case of emergency, it could readily serve as an antitank as well as an anti-aircraft weapon. Comparative test showed this gun to be superior in every respect to the 88mm. German gun. When test fired against the famous German "88", even the American 3-inch anti-tank gun performed favorably, its projectile completely piercing an armor plate which the German shell failed to penetrate. This gun was rated fully capable of disposing of German tanks at long ranges, while the 75mm. gun M3 scored penetrating hits on enemy armor at distances of from 2,000 to 2,800 yards. At 3,000 yards this gun, mounted in M4 ("Sherman") tanks, silenced enemy anti-tank guns with from three to five rounds of ammunition.

Production was begun of a new heavy howitzer to replace an obsolete 1918 model.

Toward the end of the year the Dickson Gun Plant made its first shipments of rough-machined gun tube castings. This development promised to speed up the production of all guns from 37 to 90mm.

Experience in Africa revealed that the medium tank was equal to practically any demand made upon tank materiel. The M5 series of light tanks replaced the M3. The airborne tank T9 went into production during the last half of the fiscal year. The unit ground pressure of U. S. medium and light tanks was reduced by increasing track width. In consequence, tanks were better able to negotiate soft and boggy terrain. An improved chevron type rubber block track, using less rubber and wearing longer than the current model, was designed for the Medium Tank M4.

Gun motor carriages which stood the test of combat during the year included the M15 multiple gun vehicle (one 37mm. cannon and two .50 cal. machine guns) and the M7 with its 105mm. howitzer. The former, mounted on the half-track chassis M3, was designed to bring fire speedily upon aircraft appearing too suddenly to permit the use of directors or remote control systems. The latter, first on the Medium Tank M3, later on the M4 chassis, became the nemesis of Marshal Rommel's tanks and other armored vehicles, knocked out his famed 88mm. all-purpose gun, and proved one of America's most useful artillery weapons. The still larger and more powerful motor gun carriage M12 came into production during the fiscal year. Carrying a 155mm. gun mounted on a medium tank chassis, it was capable of a speed of 30mph, could ascend or descend a 30 degree slope, and had a cruising range



105mm Howitzer Motor Carriage M7 in traveling position. (German 88mm gun shown at left.)

in excess of 100 miles. The M10, 3-inch antitank gun was also mounted on a medium tank chassis.

Body armor for the individual soldier was tested during the year. When the results showed that to give the infantryman reasonable protection a metal weight of 50 pounds was necessary, the trials were discontinued. For Air Force personnel, however, the usefulness of armor was plainly established.

American attempts to develop a new submachine gun equalling in simplicity and low cost of manufacture the British "Sten" resulted in the appearance of the "T15", later put into production in June, 1943, as the M3. This submachine gun had a unit cost of \$21.36 as against the \$51 price of the modified Thompson gun M2. Constructed to handle the U. S. Army 45 cal. automatic pistol cartridge, the M3 could, by replacement of barrel and bolt, chamber the 9mm. pistol cartridge used by British forces. Operating on the full-automatic, straight blow-back principle, the gun was of all metal construction, with an 8-inch barrel and removable skeleton stock. It weighed less than 9 pounds. The cyclic rate of fire was 450 shots per minute; the effective range was 300 yards.

The M1 carbine, caliber .30, was improved by redesigning the hammer and sear, permitting a reduction in trigger pull from 9 to 6½ pounds. A folding stock variation on the standard model, to be known as the M1A1, was designed and went into manufacture.

Following in the path of artillery ammunition, small arms cartridge cases in .45 caliber were made of steel during the fiscal year. All acceptance tests were met successfully.

At Shilo Camp, Manitoba, Canada, 900 Ordnance officers and men spent six winter months during the year conducting subzero tests of ordnance materiel of every variety. They accumulated data of vast importance about the maintenance of equipment in frigid climates.

A study was made of the packaging of machine guns using a dehydration process by which all water vapor was removed from the gun and its packing. Thus the weapon reached its destination rust free, and without the usual heavy coating of corrosion preventive. The weapon was then ready for instant use. To accomplish the same purpose, "ordnance wrap" was developed, a paper which kept metal parts hermetically sealed and corrosion-free even when exposed to salt water.

Ordnance personnel in arsenals and elsewhere, and workers in private manufacturing establishments were encouraged during the year to make suggestions for improvements in weapons, ammunition, and equipment. Civilian engineers especially were asked to make proposals for the redesign of ordnance materiel. During the fiscal year well over 1,000 suggestions were received. Many of these resulted in savings of thousands of tons of critical metals. Others led to definite changes in the characteristics of weapons.

Signal Corps

Signal Corps research activities were conducted by three agencies—the Signal Corps Ground Signal Service, the Signal Corps Aircraft Signal Service, and the Operational Research Group. The Ground Signal Service consisted of five laboratories experimenting with microphones, head sets, power units, acoustics and ranging, meteorological equipment, the elimination of radio interference, and detection equipment. The Aircraft Signal Service developed and designed radio equipment for aircraft and ground equipment for radio navigation. The third group studied operating problems in the communications field.

One piece of Signal Corps equipment giving outstanding performance during the fiscal year was the mobile field headquarters radio station. This set, carried in one truck and one trailer, could transmit voice or Morse Code over long distances whether the truck was stationary or rolling along the road. Two of these radio sets carried the first messages between General Montgomery and General Alexander when the British Eighth Army and First Army met in Tunisia.

The static-free radio was another piece of radio equipment to prove its successful operation under battle conditions. Used both by the field artillery and by armored vehicles, these sets had the counterpart of commercial "push-button tuning", which permitted the operator to select his communications channel instantly. The set was also guarded from detuning by vibration or jolt.

Another set giving outstanding performance in combat use was a portable radio transmitter and receiver of two sections. This set had a longer range than the "walkie-talkie." One section was strapped to a man's chest and the other installed on a guidon staff which could be carried on a motor vehicle, mounted in a cavalry boot, or placed on the ground.

A new man-packed radio model was developed and adopted during the year incorporating the latest technical achievements of radio science, such as frequency modulation, low current drain, and miniature tubes. In consequence, the new "walkie-talkie" set had greater clarity of transmission and longer battery life.

Each theater of operations demanded communications wire in staggering quantities. A new wire was developed to fulfill an acute need for a long range tactical wire in the field. Furnished in reels of $\frac{5}{8}$ mile length, this wire was intended for use primarily between the headquarters installations within a field army, such as between division and corps headquarters. It was also suitable for the construction of certain laterals, and for particular point-to-point uses by the Air Forces. Considerable quantities of this wire were provided overseas forces by the end of the fiscal year.

New radio interception sets were developed during the year, providing well-integrated operational units capable of performing all the principal functions of interception and radio direction finding that were the re-



155mm Gun Motor Carriage M12, in recoil position.

sponsibilities of Signal Radio Intelligence Companies. This equipment was further redesigned to facilitate its shipment overseas.

Since the attenuated atmosphere at altitudes above 20,000 feet occasioned the failure of intercommunication within heavy bombardment aircraft, it was necessary to design systems that would withstand variations in height and other combat conditions.

A new mast for fighter aircraft antenna was developed during the year to replace former masts. Combat experience demonstrated that these previous masts were susceptible to flutter resulting from the resonant period of vibration. This defect was eliminated from the new mast placed upon fighter craft.

An improved model of the automatic radio compass was designed during the year, with an extended frequency range. This compass indicated the direction of a ground radio transmitter in relation to the heading of an airplane, thus permitting a fix or homing.

The elimination of high voltage power supply enabled design engineers to reduce the weight and space required for aircraft radio equipment.

Special attention during the year was given to providing a "jam free" form of communication. The enemy made serious efforts to jam radio communication, particularly in combat aircraft on distant flights over enemy territory, in order to interfere with the interchange of orders and information.

The performance and reliability of radio equipment provided rubber life boats for use when an airplane was forced down at sea was improved. New generators were developed to raise transmitter antenna. New headsets were put into production, as well as new mask-type and throat microphones.

A radio buoy was placed in use during the year. These buoys were complete radio transmitting stations capable of automatic operation upon striking the water. The buoy had an identification keyer and a time-delay mechanism so that its operation could be delayed for any desired time.

The sudden change of operating frequencies of command sets from medium and high frequencies to very high frequencies necessitated a tremendous expansion of the production program for quartz crystals. Quartz production rose from 223,000 units per month, the highest obtained in the fiscal year 1942, to over two million units obtained in one month during the fiscal year 1943. At the close of the year a constant level of 1,300,000 units per month was being maintained.

A major phase of development activity was to investigate each complaint coming from the field about any piece of signal equipment. These inquiries were conducted immediately and any necessary corrective action was taken at once. Even the most thorough advance tests could not insure that under no circumstances would a failure occur. Few pieces of military equipment were more delicate than communications devices.

Test sets and maintenance equipment sets were developed to locate faults and speed the necessary adjustments. For example, one set sent distorted signals to test teletypewriter equipment. Another set permitted the complete electrical test of all the telephone station equipment used by the Signal Corps.

A sample test of discarded radio tubes revealed that approximately 25 per cent were in good condition. In order to avoid further discarding of good tubes, special testing instructions were issued to the field.

The work mentioned here by no means included all research and development activities of the Signal Corps. Enough has been presented, however, to provide a representative illustration of the work that was done.

During the fiscal year the Operational Research Group was set up staffed with civilian scientific personnel to study operational problems. The characteristics of wave propagation were examined to discover means for obtaining optimum results from ground and air communications equipment. The problems of coordinating the operation of units into a single system were examined and recommendations made for eliminating the detrimental effects of interference caused by operation of multiple units within a restricted area. This group also studied improved training methods and improved maintenance and servicing procedure. Inquiry was made into the effect of such factors as vision, fatigue, and personal efficiency upon operating personnel of ground and air communications equipment.

Chemical Warfare Service

By definition, chemical warfare had been extensively employed in World War II by June 30, 1943, since chemical warfare included the use of incendiaries. Moreover, the tactical employment of smoke to hide military movements might be regarded as a phase of chemical warfare. The use of chemical agents to produce casualties through physiological action upon the body, however, had not been resorted to by the belligerents, except in a few possible incidents. This fact did not permit any relaxation in American efforts to provide the fullest possible protection against gas attack, and to prepare for offensive action should gas be used against the United Nations.

In the fiscal year 1943 sixty-six new articles of equipment were standardized by the Chemical Warfare Service. These included both offensive and defensive items.

An outstanding accomplishment in weapons improvement was the increased efficiency achieved in the 4.2-inch chemical mortar. The range of this mortar was lengthened, and it was made a general purpose weapon capable of laying down smoke, gas, or high explosives.

The portable flame thrower was modified to permit the use of a new type of fuel of improved quality. Other changes in design and performance were also made to improve the weapon's effectiveness.



The .45 caliber Submachine gun, M3.

A new type of incendiary bomb was developed which ignited more readily and surely than many types of the magnesium bomb. Other improvements were also made in incendiaries used by Army Air Forces.

The increasing possibility that the enemy might resort to gas warfare as he assumed the defensive led to the development of new, larger tanks for gas spray by airplanes. The vesicants for use in such sprays were modified to produce more certain results. All combat planes were made potentially capable of engaging in gas attack.

For counteracting enemy air attack, the Chemical Warfare Service improved smoke emission apparatus. One development was the design and production of large, portable mechanical smoke generators, which gave persisting smoke blankets for large rear-area coverage. Another development was the floating smoke pot providing cover for amphibious operations.

New uses of colored smoke for ground-to-air signalling were found during the year. Colored smoke grenades were standardized in six effective colors. They were also adapted for artillery fire, together with a bursting-type of colored smoke mixture.

A new type of projector for the firing of gas missiles was perfected during the year, as well as improved shells. The potential area of gas attack by ground was greatly enlarged.

Chief among the items of a defensive character developed in 1943 was a new type of activated charcoal which greatly improved protection against new war gases. As a result, gas mask canisters were produced that provided security against all likely toxic agents. Two new models of gas masks for horses were placed in production during the year. These masks offered so slight a resistance to both cavalry mounts and pack animals that no discomfort or inability to work resulted. The weight of the masks was kept down in order not to interfere with mobility. Horses could wear the masks for long periods of time with comfort.

A new method of impregnating protective clothing resulted in a marked saving of critical materials and greatly simplified the design of impregnating plants.

Quartermaster Corps

The necessity of meeting the special requirements of global warfare for clothing, general equipment, and rations dictated the research and development activities of the Quartermaster Corps. A new research establishment, the Climatic Research Laboratory at Lawrence, Massachusetts, was completed during the fiscal year. This was designed originally for testing cold climate clothing, but was used for testing all kinds of quartermaster equipment to be used in cold climates.

Research work during the year was also guided by the need for finding substitutes for critical materials in general equipment. An outstanding development was the increased use of plastic materials as a substitute for

rubber and metals. An individual protective cover for protection against gas attacks was made from cellophane and adopted as standard issue for the Army. Plastic coated materials were substituted for rubber coated materials in raincoats. Plastic bugles replaced brass bugles. Plastic buttons were used on uniforms, overcoats, and other clothing. A plastic material was adopted for use as gun covers in amphibious operations and in wet climates. Plastic materials were also used in the manufacture of identification discs.

A special textured paint for helmet liners with a minimum gloss and with excellent durability was developed during the year. A coating was also devised for protecting steel parts that had replaced brass, bronze, and aluminum.

For cold climate operations, mukluks, parkas, ski-mountain boots, and mountain tents were among the many new items developed. The jungle boot, jungle hammock, and the camouflage uniform were standardized for jungle operations. In general, two uniforms were evolved. The first was a tough, light material for wear during summer, desert, and jungle combat operations. The second uniform consisted basically of a tough snag and wind resistant outer garment for wear in temperate climates, under which were added successive layers of warmth-giving garments as temperatures dropped to Arctic levels. In order to ascertain the suitability of equipment, extensive tests were carried out at the Climatic Research Laboratory.

Likewise, extensive field tests were conducted all the way from Panama to Alaska. Among these was the Alaska Test Expedition to the top of Mt. McKinley in June and July of 1942, in which many cold climate items of equipment were tested. Designs were then modified to meet field requirements. Finally, equipment actually in the hands of troops was observed under all types of conditions both behind the lines and in actual combat. Trained observers were sent to Alaska, Canada, the Aleutians, the Southwest Pacific, and Africa in order that changes as dictated by field necessities could be put in effect in the shortest practicable time.

A climatic research unit prepared climatic maps of the various areas of the world. The findings of this unit were used in determining the types of clothing and equipment to be shipped overseas. Certain types of data worked out by the unit were furnished to the Navy.

Stoves for all purposes—cooking, heating, and water heating—were a major problem. The cooking unit for the standard Army field range was redesigned. This redesign gave the Army a very simple heating unit using no critical material, compared to an intricate one, which required much critical metal. A small stove to fit into an 8-inch cook pot for use by mountain troops was successfully developed. A satisfactory stove for heating tents was also constructed. The old tent stove was not satisfactory for cold climate operations. Plywood tent poles and plywood pack boards were put into use.

Goggles were designed for use in desert and mountain warfare as well as in tanks. An improved 5-gallon water and gas container with a cam type closure, facilitating loading, was developed; it had an interior coating which prevented rust.

A satisfactory camouflage uniform was adopted as standard. This was a 2-piece uniform printed with two backgrounds, a green background on one side and a brownish background on the other for use in different types of jungles.

When troops were shipped to Africa, the presence of typhus in that area made a method of delousing clothing an immediate problem. A delousing bag was made of plastic coated material with an ampoule containing methyl bromide to be broken inside of the bag after insertion inside the clothing. This proved to be satisfactory. A new double sleeping bag for the use of mountain troops also proved very successful. It weighed less than the usual issue of blankets and was satisfactory in weather down to 80° below zero. A new type field shoe was developed which used the smooth side of the leather on the inside of the shoe and the flesh side of the leather on the outside to improve the wearing qualities.

Among the new special purpose equipment developed during the year was a portable field fumigation and bath chamber to replace the older, less practical and more cumbersome sterilization and bath unit; a semi-trailer, 10-ton refrigerator capable of handling five tons or 300 cubic feet of perishable subsistence under controlled temperatures of considerable latitude, equipped with an automatic gasoline powered refrigeration system; and a small automatic portable refrigeration unit with a capacity of 1,200 pounds of meat or 25½ cubic feet of space which could be carried on almost any kind of Army vehicle.

Corps of Engineers

The Corps of Engineers during the fiscal year carried on research work to improve construction equipment and certain special items such as land mines. Tests were conducted to provide the M1 antitank mine with a bag cover. The M5 non-metallic antitank mine was standardized, although research continued to reduce its weight and volume. In cooperation with the Ordnance Department, tests were conducted in methods of activating mines.

Extensive tests on the snake and carpet roll methods of minefield clearing were conducted at Fort Knox, Kentucky. Limited procurement of minefield clearing snakes resulted. Experimental use of mine removal blades was not fruitful. Three different types of vehicular mounted mine detectors were developed. Investigation continued to find suitable means for detecting non-metallic antitank mines. Four types of firing devices for mines—pull, pressure, release, and delay—were developed and standardized.

Initial limited procurement of Bangalore torpedoes was completed during the year and final design delivered to the Ordnance Department. Ten-pound shaped charges were also standardized. A twenty-five-pound shaped

explosive charge was tested, as well as demolition blocks and an improved composition explosive. Standard packing for the last two items was developed. Tests on packing TNT blocks were completed and resulted in the adoption of a one-pound block with a threaded bushing for receiving the standard firing device.

In the development of nets, net sets, garnishing materials, paints and other materials for camouflage purposes, particular attention was given to the concealment of the individual. This was further perfected by improvements in the form of camouflaged battle dress. The *Basic Camouflage Field Manual* was completely rewritten during the year, and several technical manuals were produced. A survey of all rear area camouflage in the United States was made for record and publication use.

Several important miscellaneous items of equipment were developed and standardized during the year by the Engineer Board and the Office of the Chief of Engineers.

Improvements in existing bridge equipment were made to keep pace with field conditions and the demands for the conservation of critical materials. A bridge testing establishment was set up at the outlet of the Imperial Dam in Arizona, where testing could proceed under controlled current conditions. The steel treadway bridge was redesigned to accommodate heavier loads in fast currents. British type railway bridges were adapted to American standard steel sections, and drawings and specifications for procurement were prepared. Development was begun on a mobile self-launching assault bridge, a larger assault boat and a four-cycle outboard motor.

Landing mats were developed to require a minimum of shipping space, and tests were made to determine the effectiveness of various types of mats on several soil types. Tests were also made for perfecting dust control methods at landing mat installations.

Modifications were effected in standard commercial construction equipment to meet the requirements of military construction in the United States and abroad. For instance, standardized pile driver heads were developed with adapters to fit any crane purchased by the Corps of Engineers. Changes and modifications of existing equipment, based on reports from the field, were carried out continuously.

A sea-loading pipeline for unloading tankers on beaches was developed; the standardization of assault, utility, and reconnaissance boats was initiated; mapping methods and distribution sets for field use were standardized; design drawing and specifications were completed on six different types of railway cars; four War Department blackout specifications were published as a result of tests; and experimentation on barrage balloons produced several improvements.

Important items of miscellaneous Engineer troop equipment developed during the year were portable oxygen, hydrogen and acetylene generators; and portable fifteen, thirty, fifty, sixty, and one hundred KW dual voltage engine driven generator sets; vehicle mounted mine detectors; and water-borne supply carriers.

The Medical Department

Most research activity of the Medical Department was devoted to experimentation with new types of drugs and new types of therapy. Constant study was made of the suitability of surgical instruments, sutures, and other items of equipment. For example, the replacement of catgut with cotton thread, a better suture material, resulted in substantial savings in procurement.

The Equipment Laboratory at Carlisle Barracks continued its test of medical field equipment. Several new items were designed, and substitute materials were found for the highly critical ones in medical equipment.

Transportation Corps

Most transportation equipment purchased by the Army Service Forces was of standard commercial design. Certain modifications had to be made, however, in brakes, couplings, and track gauges on railway equipment going overseas. During the fiscal year a number of craft were specially designed for service in Arctic waters, such as a 74 foot tug boat, wooden and steel barges, small freight and passenger boats, and cranes. The Chief of Transportation also collaborated with the Pullman Company and the Association of American Railroads in research and experimentation on specially designed troop cars and kitchen cars. As a result, 1,200 troop sleeper cars and 400 kitchen cars were to be purchased by the Pullman Company. The cars were designed to use mainly non-critical materials and to have a low-initial cost as well as a low-maintenance cost. The troop sleepers would be readily convertible into high speed freight cars when no longer needed as passenger carriers.

The Transportation Corps developed a demountable trailer with a wheel base adjustable to various haul requirements. It also collaborated with the Office of Defense Transportation in developing a number of new vehicle designs. One was a new type body for a 29 passenger bus of plywood and pressed wood.

With the assistance of the National Defense Research Committee and other agencies the Transportation Corps worked on the engineering aspects of the amphibian jeep and the amphibian two and one-half ton truck.

Relations with other Agencies

The Army Service Forces worked closely with a number of civilian agencies in its research program. The most important of these was the Office of Scientific Research and Development created by Executive Order No. 8807, January 28, 1941. This office operated through a National Defense Research Committee and a Committee on Medical Research. The Army Service Forces had a representative assigned to each section of the National Defense Research Committee. The Requirements Division provided a representative of the Army Service Forces to sit on the Committee itself. The Surgeon General's Office dealt directly with the Committee on Medical Research.

All projects upon which the individual Technical Services desired the assistance of the National Defense Research Committee were first examined by the Requirements Division. An effort was made to prevent duplication of research activities. Also, requests were disapproved which would lead to the use of industrial or other research facilities already engaged upon more important work.

The Requirements Division received ideas for new types of equipment from the National Inventors' Council in the Department of Commerce. Those proposals that the Council thought worthy of consideration by the War Department were reviewed by the Requirements Division and referred to the appropriate Technical Service. The Requirements Division was also the official link between the Army Service Forces and the Army Ground Forces on general development problems.

The relationships of the War Department to other agencies in the field of research and development activities might best be understood in terms of a specific example. Let us suppose that officials at the fighting front believed there was a need for a new type of tank with certain special fire power characteristics. These ideas would be sent to Headquarters of the Army Ground Forces. The proposals were crystallized into definite military characteristics in terms of tank speed, fire power, type of ammunition, number of crew, etc. The desired tank characteristics were then submitted to the Requirements Division of Army Service Forces. This Division referred the individual problems in the development of such a tank to the appropriate Technical Service responsible for procuring each item. The tank itself, the gun, and the ammunition would be referred to the Ordnance Department. The Technical Division of the Ordnance Department would normally take up its problem with some industry equipped to do research on the subject. Developmental contracts would then be placed. In the development of new types of ammunition, a new fuze might be needed. Here the problem might involve basic research. The Ordnance Department would take the matter up with the Requirements Division in Headquarters, Army Service Forces. In turn, the problem would be discussed with the appropriate division of the National Defense Research Committee. The section would designate an industrial establishment, a university laboratory, or some other research facility to do the work. The Office of Scientific Research and Development would then award the necessary developmental contract for the new type of fuze.

Development of a new tank gun would probably be handled by an Ordnance arsenal, since most of the "know how" on artillery was developed during peace time in these establishments. The arsenal might run into the problem of designing a stabilizer to permit accurate firing while the tank was in motion. A research project on this subject would then be set up and the problem would be checked with the National Inventors' Council to see if any ideas for stabilizers were in its files. The Council might know of an expert in the field and recommend him to the Chief of Ordnance for the developmental work.

Research work on the tank radio would go to the Signal Corps. The problem would be explored by the Signal Corps laboratory or given to one or more industrial concerns. A third alternative would be to set up a project through a section of the National Defense Research Committee.

All of these efforts might eventually result in the development of a new tank which would be built and tested jointly by the Ordnance Department and the Army Ground Forces. If accepted, arrangements would then be made for its production.

Research projects were necessarily of a highly secret nature. This fact, however, did not prevent the existence of close working relationships between the Army Service Forces on the one hand, and the Office of Scientific Research and Development on the other. The joint efforts of both resulted in numerous improvements in the equipment with which the soldier of the United States and of the United Nations was provided.

From the National Inventors' Council likewise came various ideas that were adopted by the Army. For example, the cardboard ammunition container and a tank ventilating unit were two suggestions coming through the National Inventors' Council that were put into use by the Army Service Forces.

II

DETERMINATION OF REQUIREMENTS

The procurement objective of the Army Service Forces was to obtain through each of the Technical Services the supplies and equipment needed to outfit complete fighting units. Air Forces units, ground divisions, and all other ground units were not ready for service until they had received the right quantities of Ordnance, Quartermaster, Medical Engineer, Signal, Chemical Warfare, and Transportation equipment.

If the procurement activities of each Technical Service were to result in troops properly equipped with the supplies they needed, a carefully determined and balanced program of requirements was necessary. This the Army Service Forces developed during the fiscal year 1942 in the form of the *Army Supply Program*.

Each Technical Service prepared an estimate of the items it would be expected to procure in accordance with instructions received from the Commanding General. Requirements were based upon the number of troop units to be activated times the equipment allowances for each such unit. Supply needs for men and equipment for units together made up initial Army requirements. To these initial requirements had to be added maintenance needs and distribution needs. In order to keep maintenance supplies in the hands of troops at continental posts and overseas, it was necessary to have supplies all the time at various stages of distribution on the way to them. Total Army requirements were initial needs plus maintenance and distribution needs. These requirements less stocks in depots and delivered to troops made up net requirements to be purchased. To the last sum were added items to be purchased for the Navy, for Lend-Lease, and for other special purposes. The result was the Army Supply Program.

Careful attention was given by all Technical Services during the fiscal year 1943 to their methods of calculating spare part requirements for maintenance purposes. Efforts were made to reduce such requirements to known minima and also to insure adequate variety. Maintenance began to be figured in replacement *parts* rather than by complete unit replacements. In the Office of the Quartermaster General "distribution factors" were discarded in calculating requirements, since it was believed that such factors were too rigid and unrealistic to be of value. Instead, appropriate weights were given rates of maintenance and authorized reserve levels within the United States and overseas as the means of determining distribution requirements. This procedure enabled the Quartermaster General to check distribution estimates against actual supply operations. The method was adopted by other Technical Services upon the direction of the Commanding General.

One aspect of requirements determination was the careful review of Tables of Equipment and Allowances to make sure that the items wanted were needed and obtainable. The elimination of those items of equipment not

absolutely indispensable to the accomplishment of the mission of a particular military unit meant a reduction in requirements.

Each Technical Service kept up to date catalogues of the items of equipment it procured, with necessary maintenance data.

The Quartermaster General during the fiscal year organized a Field Observation and Liaison Section to obtain requirements data. Officers were stationed at depots to develop data to improve the calculation of requirements. They were also sent overseas to gather subsistence and maintenance data to send back to Washington. Teams were stationed at twenty-five posts inside the United States to make a continuous check of stock records in order to gather data to be used in estimating requirements for clothing and equipage, subsistence, and general supplies.

The first section of the Army Supply Program, setting forth procurement goals in all ground equipment for the calendar years 1942, 1943, and the first six months of 1944 appeared in April, 1942. The remaining four sections of the program as originally projected were published before the end of the fiscal year. A sixth section was added to the Army Supply Program on September 1, 1942, setting forth requirements for miscellaneous supplies to be purchased for our Allies. These were items not used by American troops but desired by other armies and to be bought by the Army Service Forces.

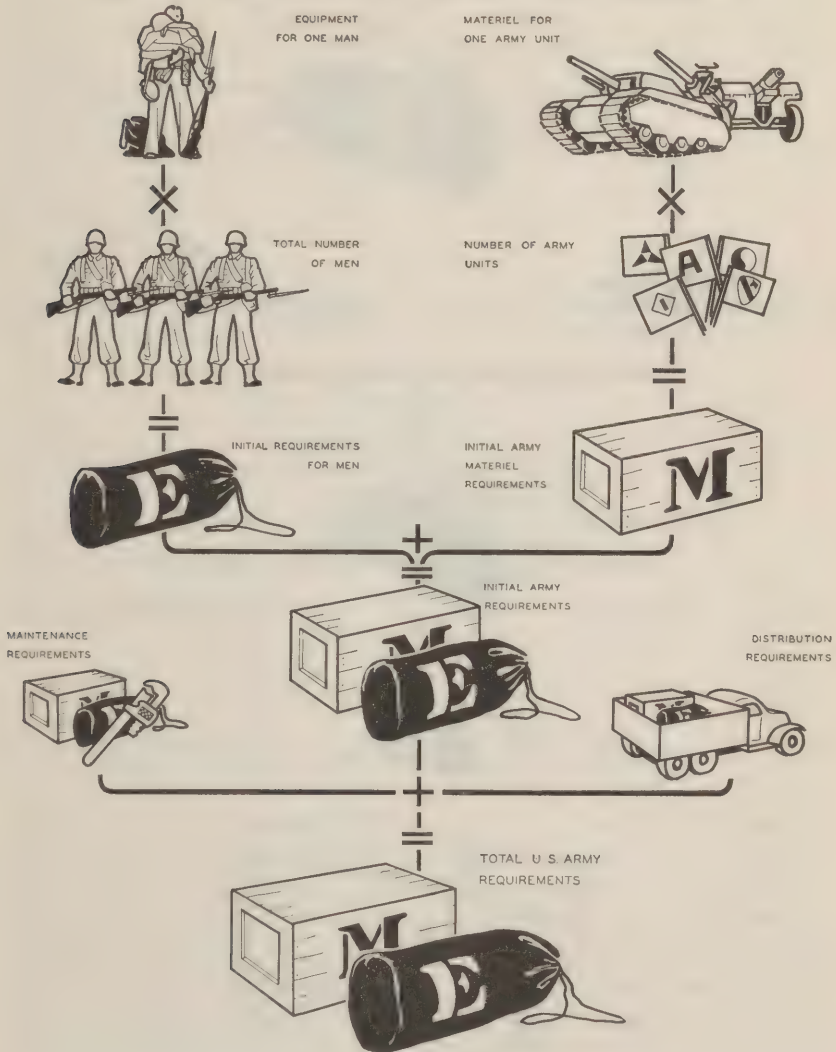
The six sections of the Army Supply Program were reduced to four sections during the fiscal year 1943. The original Sections I and III were combined into a single section of two parts. Part A showed requirements in ground equipment and Part B showed requirements in miscellaneous and expendable ground supplies. Sections II and IV were combined into a Section II showing requirements for air equipment and miscellaneous supplies excluding airplane engines and airplane bodies. The original Section V on construction became Section IV of the Army Supply Program, and Section VI on miscellaneous international supplies became Section III.

The purpose of the Army Supply Program was to set forth for all major items of equipment and in dollar totals for miscellaneous supplies the materiel requirements of American military plans, plus the Army military requirements of the United Nations to be obtained within the United States. This program then became the basis for estimating raw material requirements, for planning the construction and conversion of industrial facilities, and for letting contracts. By memorandum dated July 22, 1942, the Army Supply Program became the official authorization for issuing procurement directives by the Technical Services of the Army Service Forces. The Army Supply Program was also used in determining the budget needs of the War Department.

Procurement requirements were determined on the basis of troop composition plans and their equipment allowances. The allowances for a particular item of materiel in various Tables of Equipment multiplied by the number of organizations of each type to be activated determined the total requirements for that item. To this sum were added additional needs based upon distribution and maintenance factors. The result was the total United

CHART 1

COMPUTATION OF THE ARMY SUPPLY PROGRAM - I

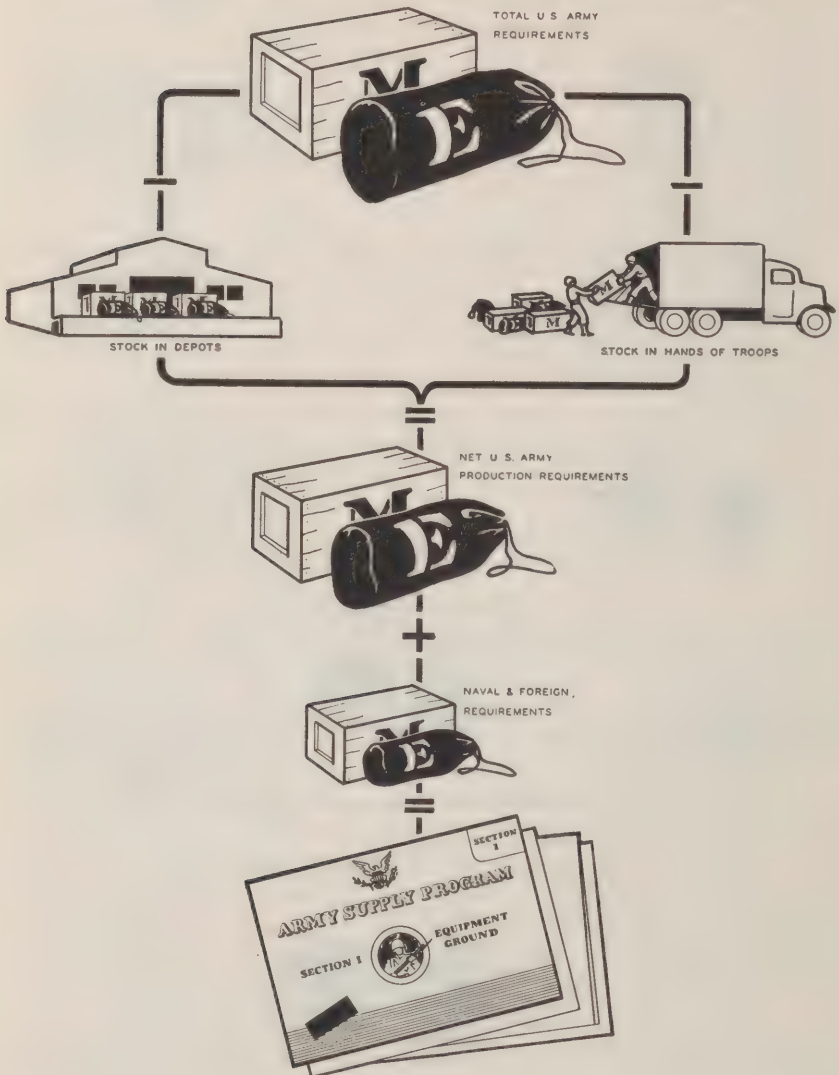


States Army requirements. Subtracted from this total were the supplies already delivered either to storage depots or to troops. Net requirements plus the requirements of the Navy and of the United Nations were the procurement requirements that went into the Army Supply Program at any one time.

Any revision in the troop composition plans of the Army—the troop basis—or any change in the Tables of Organization and Equipment for various troop units meant changes in supply requirements. No program of materiel requirements set up at any one time could expect to be lasting. Originally it was anticipated that the ground equipment section of the

CHART 2

COMPUTATION OF THE ARMY SUPPLY PROGRAM - II




















Army Supply Program would be revised every four months. Such automatic revision, however, did not prove feasible. There was one major revision of Section I of the Army Supply Program during the fiscal year 1943. It followed a major policy decision.

The materiel requirements program as originally set up by the War Department in February, 1942, was the projection of existing military plans of the United States and of the United Nations translated into supply objectives without any consideration for the practical limitations of available raw material and other industrial resources. Through 1943 these needs came to 63 billion dollars. At the time when Section I of the Army Supply

Program was originally published in April, 1942, an overall reduction of about 20 billion dollars in the procurement objectives for 1942 and 1943 was effected. The raw material requirements for this program were still greater than available supply. Another revision was then made in May, 1942, reducing procurement objectives through 1943 to 38 billion dollars. A regular recomputation of the program in September, 1942, did not affect the total procurement goals.

Section I of the Army Supply Program, the basic procurement program of the Army Service Forces, had to be greatly revised in October and November, 1942.

CHART 3
PRODUCTION INDEX RELATIONSHIPS
OF TWO POSSIBLE TROOP BASIS PLANS

<div style="text-align: center;"> PRODUCTION INDEX INFANTRY DIVISION = 1 ARMORED DIVISION = 51 MOTORIZED DIVISION = 2 AIRBORNE DIVISION = 7 CAVALRY DIVISION = 1.4 </div>					
PLAN I PRODUCTION INDEX RELATIONSHIP	NUMBER OF DIVISIONS	TYPE OF DIVISION	NUMBER OF DIVISIONS	PLAN II PRODUCTION INDEX RELATIONSHIP	
40 	40	INFANTRY 	60 	60	
60 	30	MOTORIZED 	20 	40	
102 	20	ARMORED 	10 	51	
5.6 	8	AIRBORNE 	8 	56	
2.8 	2	CAVALRY 	2 	28	
210.4 	100	TOTAL	100 	1594	

The War Production Board determined that the total procurement program of the War Department, the Navy Department, and the U. S. Maritime Commission, when added to indispensable civilian requirements, exceeded the production potential of American industry. The overall limit for the procurement of war supplies was set at some seventy-five billion dollars in 1943 by the War Production Board. This figure was subsequently increased to eighty billion dollars. Within this overall limit the Joint Chiefs of Staff of the United States, in accordance with strategic plans, made necessary adjustments in procurements goals for the Navy, the Maritime Commission, the Air Forces, and the Army Service Forces.

The decision was made to increase the aircraft program and to utilize available raw materials for meeting the aircraft procurement objectives. In consequence, the plans for ground force troops were revised with less emphasis upon armored and mechanized forces. At the same time, the War Department designated a number of units to be activated in 1943 as training units which were to receive only 50 percent of their requirements for all major items of equipment except rifles and gas masks.

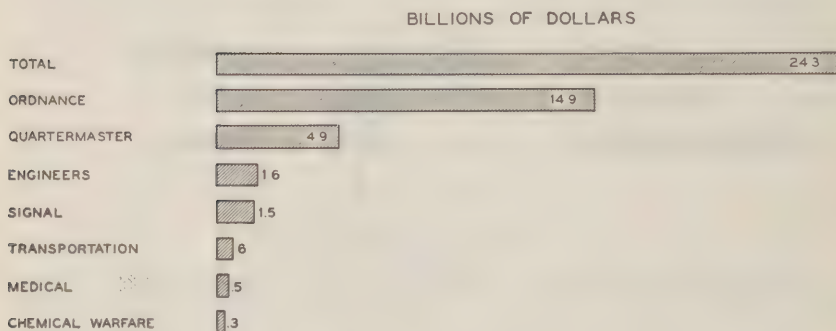
It has been estimated that it takes five times as much productive output to equip an armored division as it does to equip an infantry division. A

motorized division requires twice as much productive output as an infantry division. Accordingly, a reduction in the number of armored divisions and motorized divisions with a corresponding increase in the number of infantry divisions profoundly affected the materiel requirements. In turn, of course, the types of military units that could be completely equipped and trained had its effect upon military strategy. The two troop composition plans shown in the accompanying illustration are purely hypothetical but will indicate how a change in such plans will affect materiel requirements.

The revision of Section I of the Army Supply Program published in November following the adjustment in troop basis reduced the ground force procurement objectives for equipment to 31 billion dollars for the calendar years 1942 and 1943.

CHART 4

ARMY SUPPLY PROGRAM OBJECTIVES THROUGH 31 DECEMBER 1943



Section I of the Army Supply Program as revised and published on February 1, 1943, set forth the materiel requirements for ground equipment for the year 1943 and for the year 1944 by Army, Navy, International Aid, and total. Total requirements in Ground Force equipment for the calendar year 1943 came to more than nineteen billion dollars. Requirements for miscellaneous supplies and equipment for the calendar year 1943 were five billion dollars, making a total program for the calendar year of some twenty-four billion dollars.

Section I of the February, 1943, Army Supply Program underwent no further general revision during the remainder of the fiscal year. Individual items were changed as production possibilities changed and as Tables of Organization and Equipment for troop units were altered. All Quartermaster items had to be revised before the end of the fiscal year. The circumstances under which individual items had to be changed may be illustrated by the case of the 75mm. pack howitzer. The War Department General Staff, on the basis of overseas reports, determined that ordinary allowance types of field artillery for infantry divisions and field artillery regiments were too heavy and cumbersome for jungle fighting. Therefore, the 75mm.

pack howitzer was substituted for the basic 105mm. howitzer for certain troop units. Before a change was made in the Army Supply Program it was determined by the Production Division of the Army Service Forces that the production shift thus necessitated was feasible. Accordingly, the requirements for the 105mm. howitzer and for the 75mm. pack howitzer were changed to meet the new strategic needs.

Section II of the Army Supply Program as published on March 1, 1943, showed the total 1943 and 1944 requirements of Army Air Forces for equipment and miscellaneous supplies peculiar to the Air Forces. Engines and airplane bodies were not included. The Section did show certain items of exclusive interest to Army Air Forces purchased by the Ordnance Department, the Signal Corps, and the Chemical Warfare Service.

Section III of the Army Supply Program as published on December 31, 1942, showed required production by quarters in 1943 and for the year 1944 of miscellaneous non-common items of equipment and supplies to be provided our Allies. The totals for both years amounted to more than \$885,-000,000, of which 50 percent was to be purchased by the Ordnance Department, 20 percent by the Signal Corps, and 19 percent by the Quartermaster Corps.

Section IV of the Army Supply Program as published April 30, 1943, showed the value of construction work to be put in place month by month in 1943 and by quarters for the calendar year 1944. The major portion of the construction program was completion of existing projects, with only a relatively small number of new projects to be started during the two calendar years.

III

PURCHASING PROCEDURE

Each of the seven Technical Services of Army Service Forces let contracts for the purchase of supplies and equipment through local procurement offices. The Ordnance Department had a district system that was first set up in 1918. Thirteen Ordnance procurement district offices scattered from Boston to San Francisco were the main centers of contracting activity in the purchase of munitions. In turn, more than 75 sub-offices had been established within the various districts by July 1, 1942. By the end of the year the number of these sub-offices was reduced to 65. A standard form for internal organization of these districts was set up during the fiscal year. On June 30, 1943, the procurement district offices of the Ordnance Department were administering nearly 20,000 prime contracts with a money value close to 19 billion dollars. In addition, the Ordnance Department also obtained much of its material from its own manufacturing arsenals and from government-owned privately-operated plants.

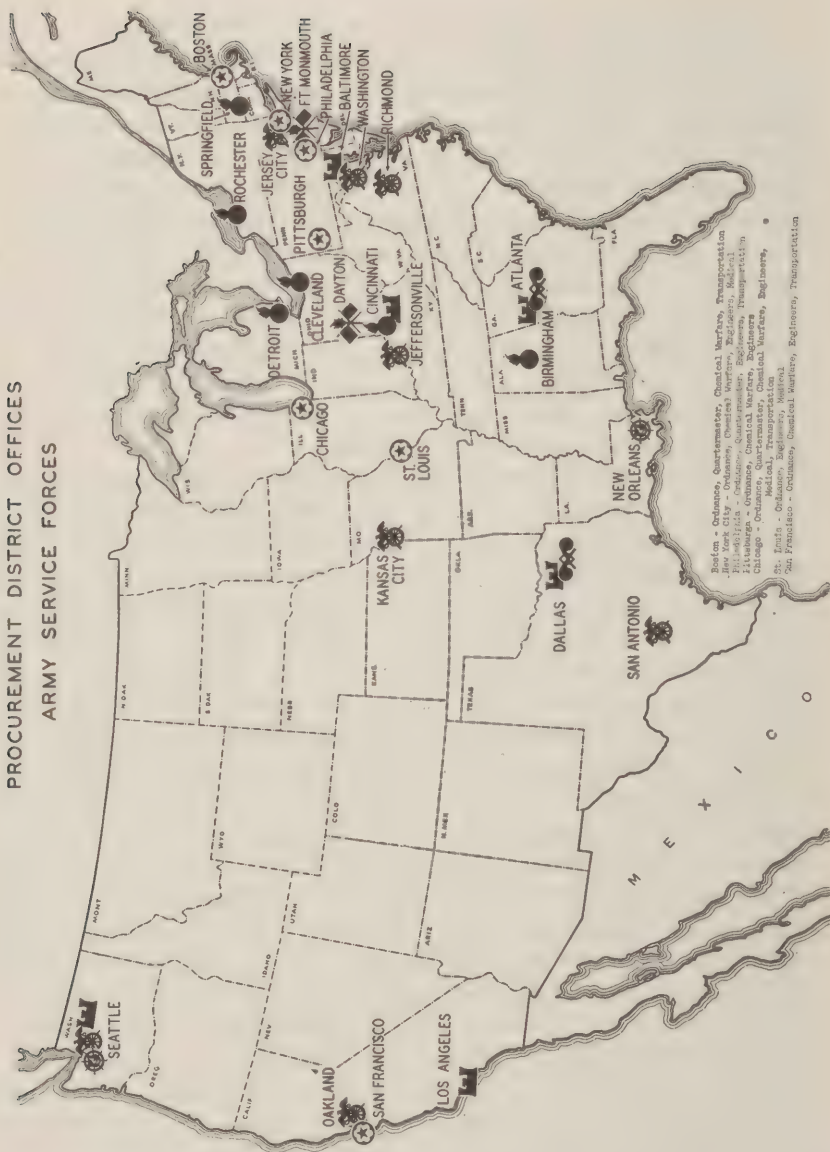
The Quartermaster Corps purchased supplies through depots located in various parts of the United States. In general, the practice was followed of having each depot specialize in the purchase of certain types of supplies. The Philadelphia Quartermaster Depot, for example, was the center for purchasing woolen cloth and uniforms. The Chicago Quartermaster Depot was the center of food procurement. The Jersey City Quartermaster Depot bought some foodstuffs and certain types of general supplies such as toilet articles and stationery. The Jeffersonville Quartermaster Depot bought canvas, chinaware, cutlery, kitchen and baking equipment, and other similar supplies. The Washington Quartermaster Depot purchased coal, office furniture, laundry machinery, and recreational equipment. The Boston Quartermaster Depot purchased shoes and other footwear. Other procurement depots were scattered throughout the United States. During the six months, January to June, 1943, the dollar value of purchases by the Philadelphia Quartermaster Depot came to \$803,000,000. Purchases by the Chicago Quartermaster Depot amounted to nearly \$300,000,000; the Jersey City Quartermaster Depot, some \$215,000,000; the Jeffersonville Depot, some \$180,000,000; the Washington Quartermaster Depot, \$100,000,000; and the Boston Quartermaster Depot, \$90,000,000.

During the fiscal year 1943 the Quartermaster Corps, while retaining depot specialization in procurement activities, authorized each depot to serve as a procurement agency for another depot in negotiating contracts, investigating deliveries, expediting production, and inspecting output. This arrangement permitted the development of local contacts between the Depot and manufacturers in its area, encouraged closer supervision of output, and saved considerable travel of Quartermaster offices.

The commercial nature of the bulk of Quartermaster items led depots to solicit informal bids or quotations from as many qualified suppliers as pos-

CHART 5

PROCUREMENT DISTRICT OFFICES ARMY SERVICE FORCES



sible when letting contracts. For certain continuing requirements, orders were placed in such a manner as to avoid interruption of production.

Signal Corps purchases were made primarily through the Philadelphia Procurement District, through the Wright Field Procurement District, and the Monmouth Procurement District. Radio communication equipment, telephone and telegraph equipment, wire, cable and photographic equipment were purchased in Philadelphia. Aircraft communication equipment and meteorological equipment were purchased at Wright Field. Radio transmitting and receiving apparatus, including electronic devices and experimental research equipment were purchased at the Monmouth Procurement District Office. The number of major Signal Corps items to be purchased was nearly 2,000 by the end of the fiscal year. District offices by June 30, 1943, had more than 74,000 prime contracts outstanding, with a total value of \$3,400,000,000.

Oftentimes, Signal Corps orders had to be placed and deliveries made in the shortest possible time. The procurement of 1,350 miles of telephone pole line complete to every cross-arm and nail, for example, had to be obtained on one occasion upon requisition from the Commanding General of the North African theater of operations. Some 450 miles of this equipment were ordered, delivered, and transported to a port of embarkation within ten days after the receipt of the cabled requisition.

At the beginning of the fiscal year 1943 the Corps of Engineers purchased construction equipment and other military supplies through six procurement district offices within the United States. Early in the year each procurement district was directed to specialize in the procurement of particular types of equipment. Thus the Chicago District purchased crawler tractors and track-mounted shovel and cranes; the New York District bought anti-aircraft searchlighting equipment; the Pittsburgh District was designated to procure barrage balloon equipment, the Philadelphia District was responsible for the procurement of sandbags and camouflage nets.

On January 1, 1943, the six procurement district offices were abolished and their functions transferred to division and district offices located in the same or nearby cities. The division and district offices were responsible for administering construction contracts. At this same time four new procurement offices were established. By June 30, 1943, Engineer procurement offices were located in New York City, Baltimore, Pittsburgh, Cincinnati, Atlanta, Chicago, St. Louis, Dallas, Seattle, San Francisco, and Los Angeles. The Corps of Engineers on June 30, 1943, had contracts outstanding with some 3,600 prime contractors.

The Medical Department purchased medical supplies through two major procurement district offices, one in New York City and one in St. Louis. A Chicago Procurement District Office was a subdistrict of St. Louis for maintaining contact with suppliers in the area. All contracts were let in St. Louis. Some procurement was also accomplished at the San Francisco Medical Depot. The New York and St. Louis procurement district offices divided the purchase of all kinds of drugs, biologicals, and medical equipment between them on a geographic basis. In the fiscal year 1943 the Medical Depart-

ment had some 25,000 prime contracts outstanding with some 2,500 contractors.

The Chemical Warfare Service purchased supplies through 6 procurement district offices located in Boston, New York City, Pittsburgh, Chicago, Dallas, and San Francisco, and through two sub-district offices in Atlanta and Los Angeles. The Transportation Corps purchased supplies through 6 procurement district offices located in Boston, Philadelphia, Chicago, New Orleans, San Francisco, and Seattle. In order to facilitate the procurement of marine items, an arrangement was made between the Maritime Commission, the Navy Department, and the War Department whereby each of these agencies had exclusive use of certain plants. Under this arrangement 34 shipbuilding companies devoted their facilities exclusively to the production of floating equipment for the Transportation Corps.

Procurement district offices not only were responsible for letting contracts, but also kept in close touch with the contractor at all times during the manufacture of the desired items. The raw materials problems of the contractor were handled through the procurement district office. The district office had inspectors examining output. Finally, formal acceptance of output and shipping instructions to the manufacturer were handled by the procurement district offices.

Purchase Practice

Each of the seven Technical Services purchased its requirements under procedures that were increasingly standardized for the Army Service Forces as a whole. During the previous fiscal year a uniform set of procurement regulations was published in a single volume. This volume was kept up-to-date during the fiscal year 1943 and continued to provide a single standard set of instructions for all purchasing operations. The procurement regulations were revised from time to time in order to keep purchasing officials in the field abreast of current policies and changes in procedure.

All of the Technical Services were encouraged during the fiscal year to improve their use of cost and price data in the original negotiation of prices. In this way the award of contracts at excessive or too low prices was avoided and the burden of subsequent renegotiation lessened. Regular and specially called meetings of contracting officers and their price analysts were held for training and instructional purpose. A service was developed for obtaining and disseminating comparative prices through the use of the basic data gathered in cost analysis work throughout the Army.

The Signal Corps, for example, presented information to its potential contractors in advance on such aspects as contingency allowances, admissible and inadmissible cost items, overhead charges, and profit mark-up. Contractors were thus guided in making bids on specific procurement items. The system proved to be so satisfactory that plans were made to extend it to all contractors of the Signal Corps.

Purchase procedure in all of the Technical Services was carefully examined during the year in order to lessen the time in awarding contracts and to eliminate much of the paper work and other routine. Considerable time

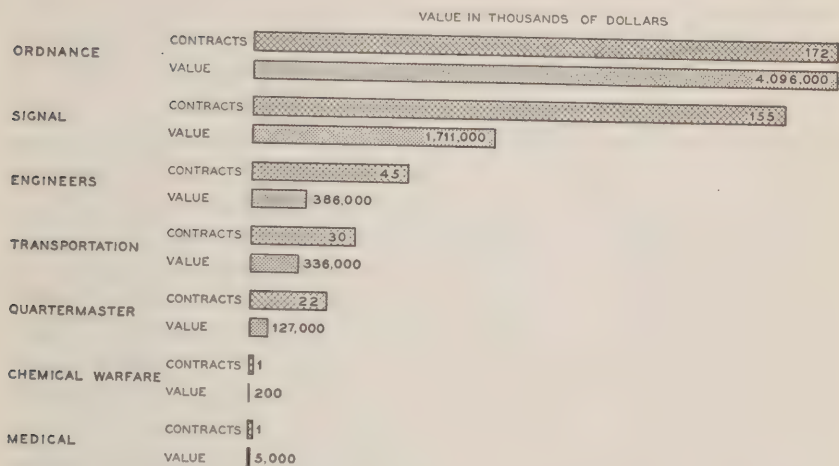
was devoted to the development of a combination purchase order and voucher suitable for use by posts, camps, and stations.

At the close of the fiscal year 1943 17 War Department contract forms, available for use by all procuring branches, had been promulgated. In addition, upwards of 60 contract forms were approved for the use of particular Technical Services, staff divisions exercising procurement functions, and Service Commands. A considerable number of mandatory and optional clauses were approved for use, while others were modified or withdrawn from use.

One of the major legal problems in the procurement field was that of providing uniform procedure for terminating contracts for the convenience of the Government. The Army Service Forces worked with the War

CHART 6

CONTRACTS CLEARED BY HEADQUARTERS, A S F 1 JANUARY 1943 TO 30 JUNE 1943



Production Board in preparing appropriate contract provisions and operating procedures. Contract termination because of real concern during the fiscal year, for the reduction in ultimate procurement goals for the Army Service Forces and changes in types and quantities of items to be purchased made it necessary to end many contracts. By June 30, 1943 the Signal Corps, for example, had terminated 105 supply contracts involving over \$200,000,000.

All contracts awarded by a Technical Service which involved a departure from standard provisions or standard contract forms were reviewed and approved by Headquarters, Army Service Forces. All single contracts involving a cost of more than five million dollars were also reviewed and approved by Headquarters. The accompany chart shows the number of contracts cleared and the amounts involved for the last six months of the fiscal year 1943. At the same time, the offices of the Chiefs of Technical Services were encouraged to give broad procurement discretion to their dis-

strict offices and to review only those contracts requiring approval in Headquarters, Army Service Forces. Modifications in contracts and the handling of many minor claims were left to local procurement officers.

Continual efforts were made to avoid the purchase of identical or similar types of articles by two or more Technical Services. During the last six months of the fiscal year some 510 items were specifically assigned by the Procurement Assignment Board to a particular service for purchase. The available supply was then allotted to various Technical Services in accordance with their needs. Among the products for which purchasing responsibility was thus centralized were replacement tires and tubes, gasoline and fuel oil, motor vehicles, time pieces, bakery equipment, kitchen apparatus and mess equipment, and laundry and dry cleaning equipment.

The procurement regulations on requisitioning were completely rewritten to place in the Technical Services and Service Commands the authority and responsibility to perform the administrative functions incident to the payment of compensation for property taken by requisition. The policies and procedures to be followed in carrying out such administrative functions were prescribed. During the period, snow plows needed to clear various airports in this country and in Russia, copper cable and steel sheets which had been denied export license, TNT, a paring machine, and frozen and chilled beef were taken by requisition, when it was found impossible to obtain such property by purchase. Blanket authority to issue requisitions for food required for the armed forces in cases where other procurement methods failed was obtained from the War Food Administrator.

Although Headquarters, Army Service Forces did not itself let contracts, it was necessary on various occasions to meet serious problems by central action. In November, 1942, for example, Headquarters officers, in cooperation with the War Production Board, were able to locate badly needed snow plows for use on the Alcan Highway. The trucks to be used with the plows had to be released from frozen stocks in dealers' hands. Both plows and trucks were delivered to the Corps of Engineers by the close of the year. The process was reversed when the Defense Supplies Corporation required 14,000 tons of four-point hog wire to aid civilians in the damage caused by floods. Action was taken to procure such wire from the Corps of Engineers.

Price Control

Prior to May, 1942, the War Department retained exclusive jurisdiction over the control of prices paid for military articles. In that month the Office of Price Administration promulgated the General Maximum Price Regulation which brought the prices of all commodities under the limitation of the highest prevailing price during the month of March, 1942. This regulation applied to military articles as well as to civilian goods. It threatened seriously to interfere with War Department procurement activities.

In purchasing military supplies, the price factor was a variable consideration. The time element might greatly affect the price charged the War Department. When particular supplies had to be acquired in a very short period of time, as for the North African campaign or for special operations,

an increase in price was usually necessary in order to acquire the goods by the needed date. Manufacturers were compelled to employ more workers for longer hours and pay overtime labor costs that were frequently unnecessary under more normal production circumstances. Transportation considerations, packaging demands and the volume of production required were other factors having an important influence upon the prices of War Department purchases. The necessity of negotiating each one of these individual situations with the Office of Price Administration would have placed a great burden upon the officials of that agency and of the War Department.

For these reasons, an agreement was reached between the War Department and the Office of Price Administration in October, 1942, whereby price control over purely military goods was to be exercised solely by the War Department. In general, the effect of this agreement was to exempt from the General Maximum Price Regulation and other price controls all purely military articles without civilian-type counterparts. The sale of component parts and basic industrial materials to the manufacturers of Army materiel might be subject, however, to control by the Office of Price Administration. For example, the first sale of a rough casting of the armor plate for the case of a tank transmission would be brought under OPA control. Subsequent operations to finish the armor plate were under Army control. As a part of the agreement, the War Department undertook to provide the Office of Price Administration with a periodic price index of all products under War Department control.

Interpretation of border-line cases in the general division of responsibility between the Office of Price Administration and the War Department was worked out by individual negotiation. All cases were settled without difficulty.

The extension of rationing controls during the fiscal year 1943 over an increasing number of commodities used by civilians brought about additional questions for settlement between the Army Service Forces and the Office of Price Administration. The Army as such was exempt from rationing, but Army personnel when on leave or not served food at regular messes was not exempt from rationing. Restaurants or cafeterias for officers or enlisted men at Army posts received no preference in treatment from any other public eating place. The War Department did not ask and did not expect any such preferential treatment. Arrangements were made, however, so that soldiers at home on furlough would receive ration allowances of foodstuffs and thus not consume the allowance provided other members of their families.

Arrangements were also made during the year to permit military personnel to purchase rationed shoes under carefully controlled circumstances. Military and civilian personnel of the War Department often were obliged to purchase gasoline in small quantities from private dealers, particularly when on trips in the course of official business. To enable the dealer to obtain replacements for gasoline thus disbursed, the Office of Price Administration permitted the purchaser to give the seller a special receipt form previously validated by an authorized officer of the War Department.

Although free from control by the Office of Price Administration in fixing prices of military goods, the Army Service Forces desired to avoid the

payment of excessive prices. The Under Secretary of War on June 30, 1942, designated a War Department Price Adjustment Board which was located within Headquarters, Army Service Forces, for administrative purposes. This Board functioned under regulations determined by it and approved by the Under Secretary. In turn, each of the Technical Services of the Army Service Forces created a Price Adjustment Section to direct the renegotiation of contracts in accordance with the policies laid down by the Price Adjustment Board. Renegotiation agreements were further subject to the approval of the Board. By the end of the fiscal year, some 35 headquarters and regional offices had been established within the Army Service Forces to handle renegotiation contracts.

Renegotiation procedure were worked out during the past year without the benefit of any precedent. No presumption of fraud attached to the renegotiation of contract prices. The basic theory of price renegotiation was that the lack of experience in military production by most contractors might have resulted in excessive prices. Actual cost analysis after a period of sustained production might indicate that contract prices were higher than was necessary. This then led to excessive profits. A reduction in contract price through renegotiation was an orderly method of revising erroneous estimates of cost in the light of actual production experience. It was more effective than taxation in limiting inflation because it operated as a brake upon costs. Reduced prices, moreover, contributed to industrial efficiency and, in the long run, helped industry to maintain a good competitive position in postwar activities. The reduction in cost would also avoid the criticism and distrust which might follow in the wake of unreasonable and excessive profits.

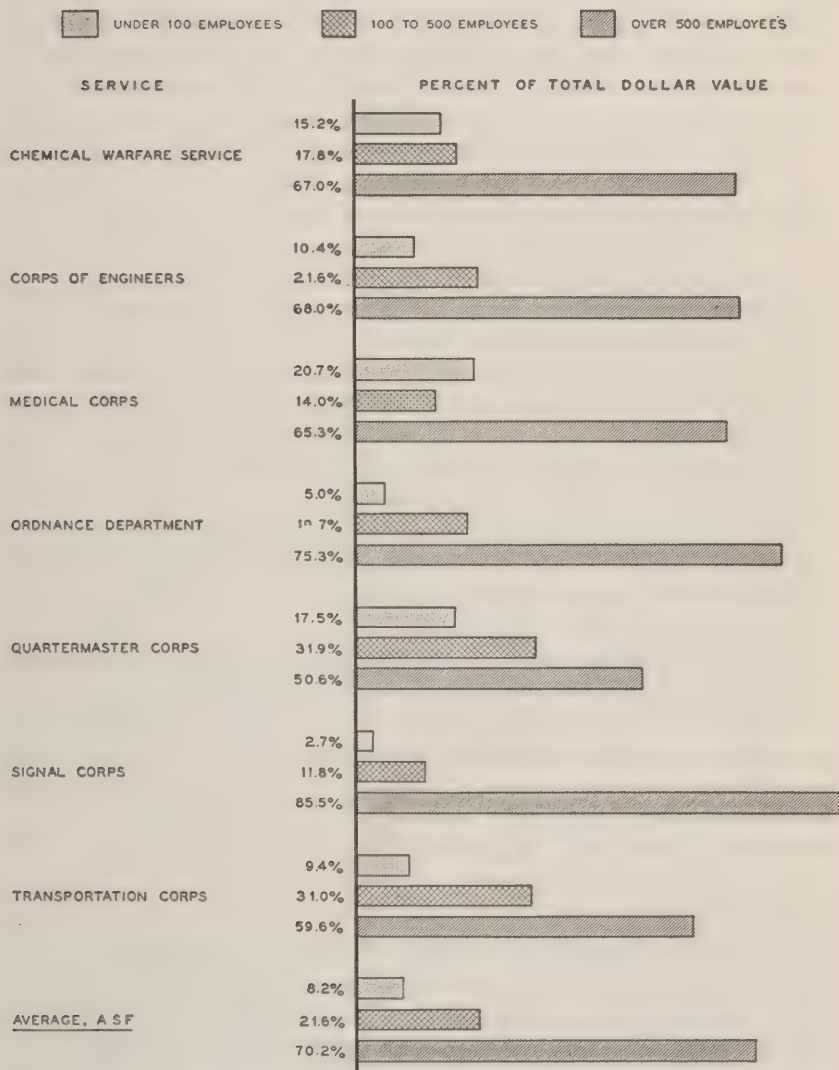
During the fiscal year reduction of contract prices within the Army Service Forces led to a saving of more than \$1,500,000,000 that would otherwise have been paid contractors. The Medical Department, for example, had completed 82 renegotiations by June 30, 1943, with 147 other contracts under discussion. Refunds and price reductions amounted to \$4,500,000. The Signal Corps had completed 126 agreements involving a recovery of over \$60,000,000. The Corps of Engineers had recovered an aggregate of \$37,000,000. The Quartermaster Corps had begun renegotiation with 2,000 contractors and had disposed of 500 cases. The agreements reached provided for the recovery of \$32,000,000.

Smaller War Plants

During the fiscal year 1943 increased emphasis was placed upon the need for obtaining supplies from smaller manufacturers. In August, 1942, following the passage of Public Law No. 603, 77th Congress, a Smaller War Plants Branch was created in Headquarters, Army Service Forces, to promote as great a utilization of small plants as possible consistent with quality, quantity, and speed in the delivery of finished war materiel. In July, 1942, officials of the Army Service Forces engaged in a series of discussions with representatives of the War Production Board seeking a means to spread contracts. On October 14, 1942, the Commanding General of the Army Service Forces issued instructions directing the Technical Services

CHART 7

WAR DEPARTMENT SUPPLY CONTRACTS PLACED WITH VARIOUS SIZED PLANTS IN FEBRUARY 1943



to discontinue the earmarking of procurement directive for placement with particular contractors. In this way local purchasing officers were given more discretion in awarding contracts. These local officials were familiar with the facilities in their areas which might be used to obtain war materiel.

In October, 1942, the Army Service Forces further agreed that the Small War Plants Division of the War Production Board should review the Army Supply Program and select suitable items for manufacture by small plants. By joint agreement of the War Production Board and the Technical Service

involved, a proportion of total procurement for various items might be held aside for placement in plants recommended by the War Production Board. During the month of December, 1942, five regional meetings were held in various parts of the United States where procurement officers of the Army Service Forces and representatives of the War Production Board discussed means for spreading contracts. An official of the War Production Board was stationed in the Washington office of each Technical Service to review all procurement directives and to make possible recommendation of suitable facilities.

Quartermaster Depots gave active assistance to small firms, rendered technical advice in management production problems, assisted small firms in placing bids, sponsored pools to widen the participation of small plants, and limited the quantities purchased from large concerns. Price premiums up to 15 percent were paid to small war plants and to plants in distressed areas. Only one out of every ten small war plants receiving Quartermaster contracts were certified by the War Production Board, attesting further to the diligent efforts of Quartermaster purchasing officers. Since Quartermaster items did not usually lend themselves to subcontracting, primary emphasis was placed upon enlarging the number of prime contractors.

The Corps of Engineers added to its list of suppliers during the year some 390 prime contractors having small facilities. Thirty-two percent of the money value of contracts was placed with the smaller war plants. In January, 1943 the Signal Corps had let contracts amounting to \$25,000,000 to factories having less than 500 workers. In April the amount was \$59,000,000, and in June, \$40,000,000.

It was apparent that smaller industrial plants were best adapted to the production for Army use of civilian-type supplies. The Quartermaster Corps, for example, buying clothes, foodstuffs, and general supplies, could place 50 percent of its contract volume with plants having less than 500 employees. The Ordnance Department, on the other hand, buying tanks, guns, and other such materiel, could place only 25 percent of its contracts with factories having fewer than 500 employees.

Tax Amortization

The expansion of production facilities to meet war procurement needs was greatly aided by legislative action permitting companies in computing their income tax returns to calculate depreciation at a rate of 20 percent per year for munitions plants. Before a company might claim such depreciation, however, the management had to obtain a "necessity certificate" attesting that the new facilities were necessary in the interest of the war effort. A Tax Amortization Branch in Headquarters, Army Service Forces, administered this statute for the War Department. A careful investigation was made of the circumstances in each application for a certificate. During the fiscal year 1943 13,678 applications for necessity certificates were filed, 10,962 were certified, 889 were disposed of other than by certification, leaving 1,827 applications pending. The estimated value of necessity certificates issued during this period was \$1,385,881,180.

IV

PROCUREMENT PROGRESS

During the fiscal year 1943 the Army Service Forces received more than 23 billion dollars worth of supplies and equipment from its contractors and from government operated plants. In the preceding year the output of supplies and equipment was only 7 billion dollars. Thus in a single year industrial production of ground-type munitions expanded more than three times.

It is difficult to present 23 billion dollars worth of military supplies and equipment in their proper proportion. That amount was as great as the entire value of all manufacturing production in the United States for the two years of 1934 and 1935. The full power of American productive capacity began to reveal itself in the delivery of goods to the Army Service Forces in the year ending June 30, 1943.

Of the 23 billion dollars worth of supplies delivered, about 55 percent were procured by the Ordnance Department. The second largest component of the total were Quartermaster supplies, amounting to some 5.6 billion dollars, or 24 percent of the total. Another 12 percent was purchased by the Signal Corps. The remaining 9 percent of supplies and equipment delivered to the Army Service Forces was purchased by the Corps of Engineers, the Medical Department, the Chemical Warfare Service, and the Transportation Corps.

Deliveries to the Army Service Forces reached a peak in the month of December, 1942. There was a substantial fall in output in January and February, 1943. A second, smaller peak in deliveries occurred in April, 1943. There was a decline of 5 points in the index of deliveries for the months of May and June.

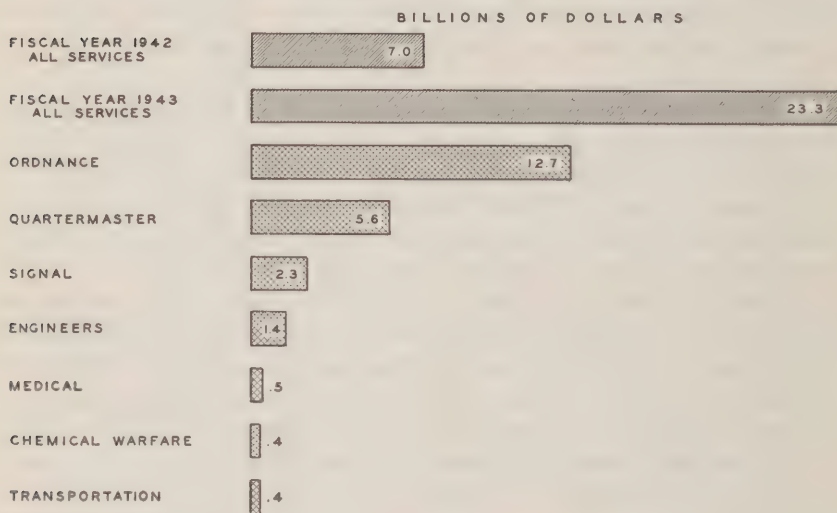
Ordnance Department

Ordnance Department procurement as a whole in June, 1943, was 54 percent greater than in July, 1942, at the beginning of the fiscal year. Procurement reached its first peak in December, 1942, only to fall sharply in the following month. Production was back at the December level by the end of the fiscal year.

The component programs of Ordnance procurement had a varied record during the year. The greatest increase was experienced in small arms ammunition; the least expansion was in all other classes of ammunition. Tank-automotive deliveries rose 70 percent between July and December, 1942, only to lose four-fifths of that gain in January, 1943. At the end of the year deliveries were 54 percent greater than at the beginning of the year, but still substantially below the December peak.

Two individual items may give an even more concrete conception of Ordnance procurement achievement during the year.. In the last six months of the fiscal year 1942 the Ordnance Department received 7,500 tanks, of

CHART 8 **DELIVERIES** **ARMY SERVICE FORCES SUPPLIES AND EQUIPMENT**



INDEX OF MONTHLY DELIVERIES **FISCAL YEAR 1943**

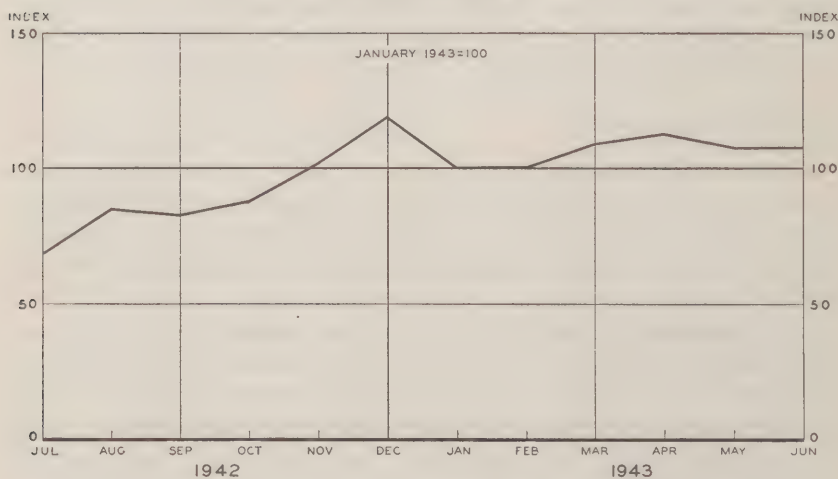
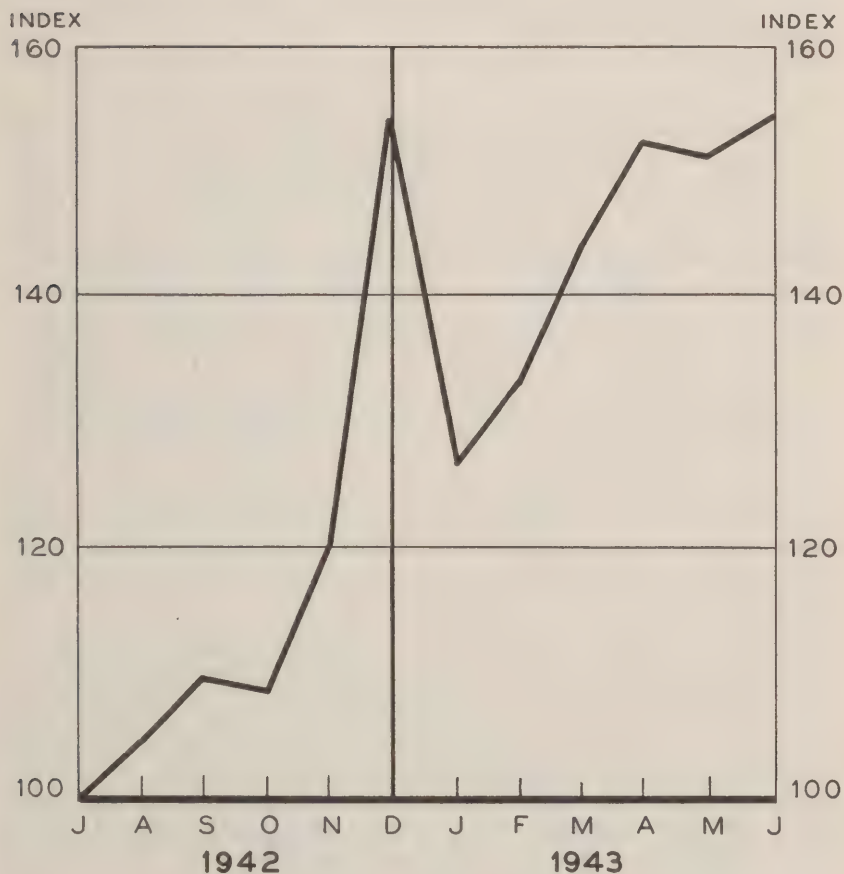


CHART 9

INDEX OF PROCUREMENT ORDNANCE DEPARTMENT

FISCAL YEAR 1943

JULY 1942 = 100



which 4,500 were medium. During the first six months of the fiscal year 1943 these numbers were more than doubled; in the last six months procurement of light tanks was cut in half while production of medium tanks was increased by 26 percent. In the last six months of the fiscal year 1943 deliveries of medium tanks were nearly three times greater than in the last six months of the preceding year.

Deliveries of caliber .30 rifles were more than twice as large in the second half of the fiscal year 1943 than they were in the corresponding period of 1942. The increase in output of caliber .30 carbines was astronomical, since this weapon was just coming into production in the last six months of 1942. From January to June, 1943 over 660,000 carbines were delivered to the Ordnance Department.

Quartermaster Corps

Quartermaster Corps procurement rose substantially during the first seven months of the fiscal year 1943 and then dropped back to the level obtaining at the beginning of the year.

Clothing

The procurement of clothing by the Quartermaster Corps remained at fairly constant levels during the first ten months of the fiscal year and then dropped. For individual items the production output had to be considerably increased. The new "battle dress" requirements meant a shift from blue denim to herringbone twill and consequently required the conversion of mill facilities working on other fabrics. The output of herringbone twill fabric was raised from 10 million to 25 million yards per month. Conversion of certain textile mills was also necessary in order to meet requirements for cold climate clothing and new fabrics. The increased blanket needs of the Army, Navy, Marine Corps and Lend-Lease required the conversion of carpet mills to blanket manufacture. An increase in production of work clothing from 2½ million items to 6 million items a month was achieved during the year. Two million jungle suits, jungle hammocks, and waterproof food bags were required in two months' time during the year. New manufacturing facilities were found capable of this output and the requirements were provided on time.

Each time the draft age was changed, there was a sudden and distinct trend in the size tariffs, tending toward larger waist measurements for the over-age groups. All issues at reception centers were tabulated by size, the tariff tables revised monthly, and the trends plotted. Records of issues by size at each of the distributing depots were kept, and regional size tariffs developed. During the months when the inductions were large, there was a decided difference in the size tariffs of the metropolitan and rural districts; also in the northern and southern areas of the United States.

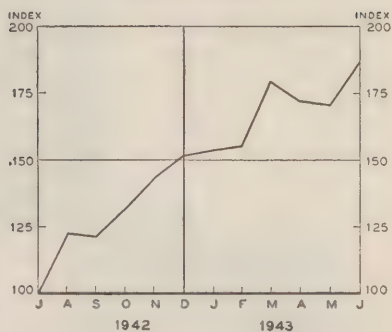
The demand for special measurement shoes became so great that 149 supplemental sizes were developed and placed in each reception center. These 149 supplemental sizes were in addition to the 90 regular sizes which were stocked in all posts, camps and stations. Similar steps were taken in

CHART 10

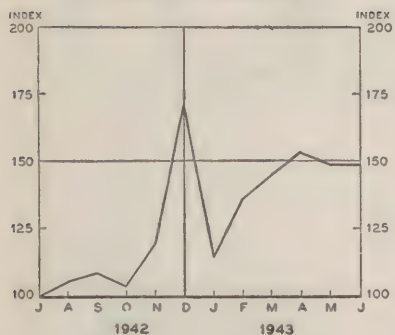
PROCUREMENT INDEXES ORDNANCE ITEMS FISCAL YEAR 1943

JULY 1942 = 100

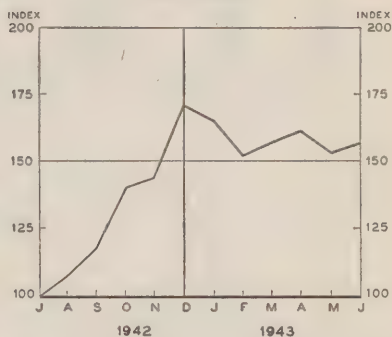
SMALL ARMS



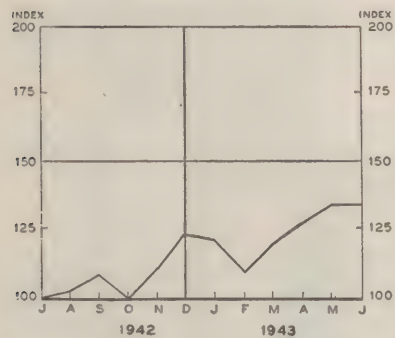
TANK AUTOMOTIVE



ARTILLERY



AMMUNITION



SMALL ARMS AMMUNITION

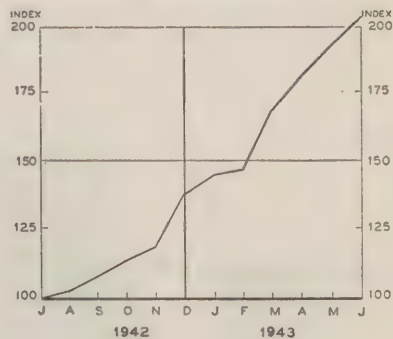


CHART 11

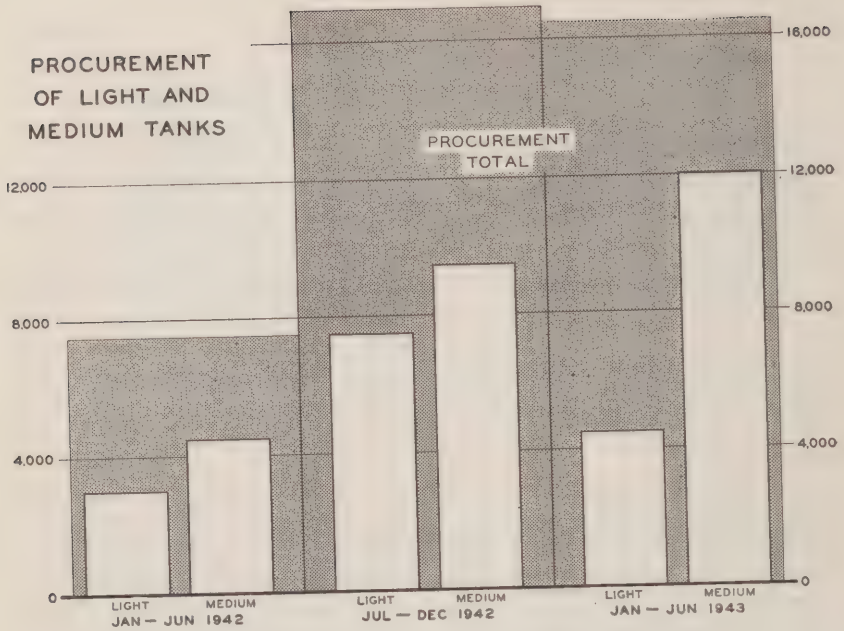


CHART 12

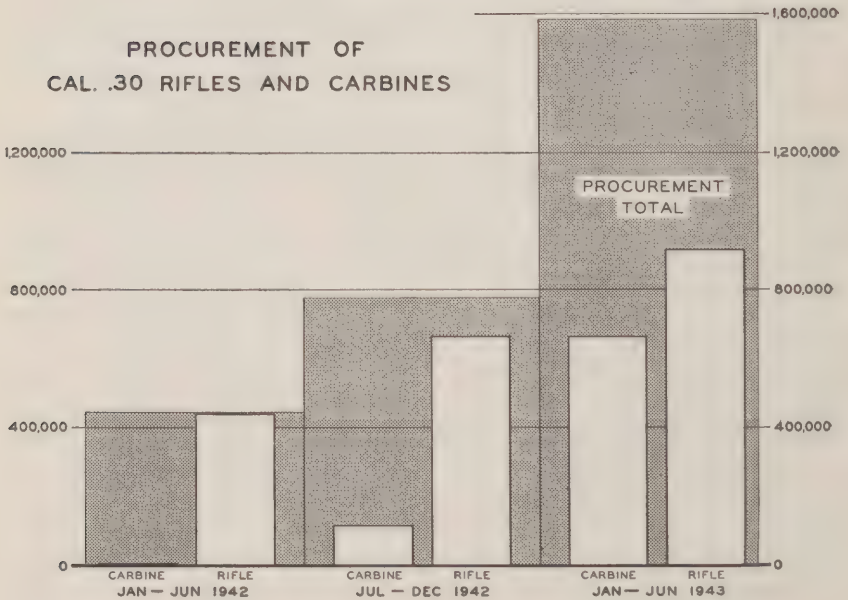
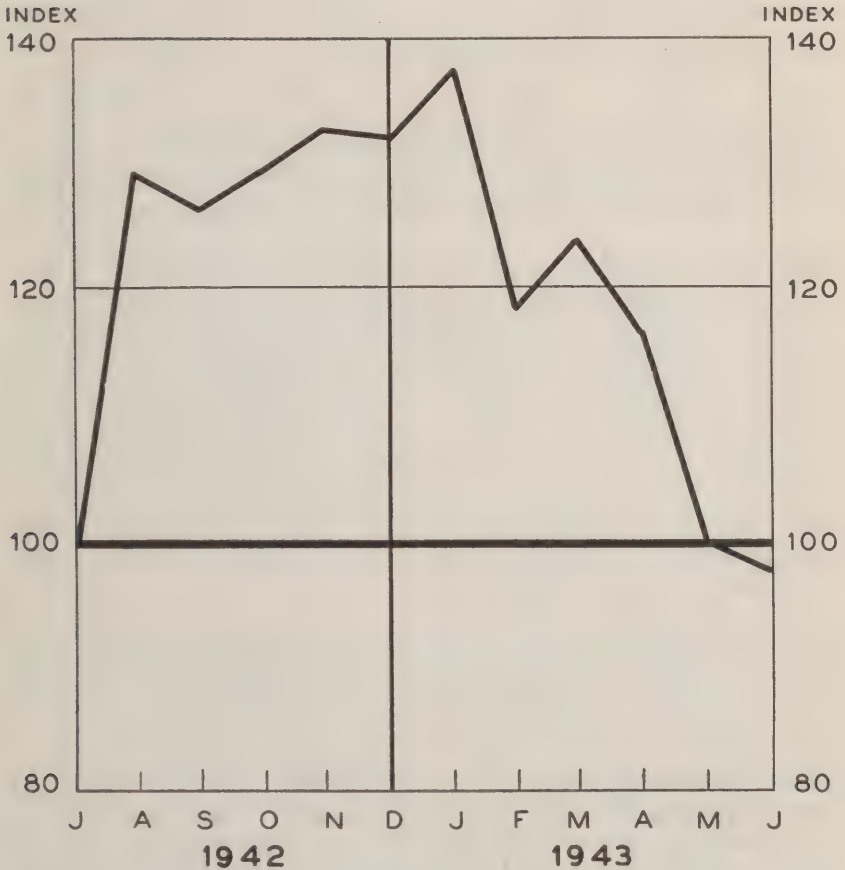


CHART 13

INDEX OF PROCUREMENT QUARTERMASTER CORPS

FISCAL YEAR 1943

JULY 1942 = 100



connection with supplemental sizes of clothing for men. New measuring machines were developed for the correct fitting of both shoes and socks, which had proved a definite problem from the standpoint of foot trouble.

The need for clothing an army of women meant that the Quartermaster Corps for the first time had extensive contracts with women's garment manufacturers. The proper fitting of WAACs' and Nurses' clothing presented much more of a problem than the fitting of men's clothing. To insure the proper fitting of the WAACs there was established in each induction center a well-equipped and well-staffed alteration shop. Personnel skilled in the fitting of women's clothing were sent to each of the induction centers to instruct personnel in the proper measuring and fitting of women's uniforms.

Many items of clothing and equipment were outmoded by the development of new models. The outmoded items were not discarded; they were issued to our own troops until the stock was exhausted or were dyed and utilized for the clothing of prisoners of war. Many of the outmoded items were also issued to Allied Nations under Lend-Lease.

Operating under an agreement between the War Department and the American Red Cross, the Quartermaster Corps turned over such supplies as clothing, toilet articles, and food for American prisoners of war. Several shipments were forwarded to American prisoners of war in the European Theater and in the Far East for distribution by the International Red Cross.

General Equipment

The procurement of various types of general equipment rose rapidly during the first half of the year, and then dropped during the last five months. The Quartermaster Corps served as a central purchasing agency for duck and webbing for the Navy, the Marine Corps, the Maritime Commission, and the Treasury Department. A wide variety of Alpine and cold climate equipment that was more or less unknown to American industry a year before was procured in substantial quantities during 1943. Warfare in Arctic regions, for example, required large sleds for transporting supplies over ice and snow. Within a short period of time a new industry was created to meet these requirements.

The production of 5-gallon water cans was so low that no issues were made except to overseas organizations during the first two months of the year. From September, 1942, to June, 1943 approximately 2½ million cans were obtained and delivered to troops.

The production of field ranges for cooking was getting under way at the beginning of the year, and by the close of the year 170,000 ranges had been delivered. The conversion of hundreds of messes to the cafeteria type created a demand for thousands of six-compartment mess trays. In spite of the critical materials involved, production was accelerated. While the demand was still greater than supply, at the end of the year 750,000 had been procured and issued.

Some 70,000 one-burner stoves were delivered and shipped overseas during the year. Procurement of this item just got underway in the year

and requirements were expected to be fully met during the fiscal year 1944.

The demand for soap increased with the expansion of the Army and its movement overseas. During the year 93,000,000 pounds of laundry soap were bought. A new type of insecticide dispenser, the Freon-Aerosol dispenser, was supplied for troops overseas. Over 1,000,000 such dispensers had been shipped by the end of the year. Eleven million bottles of insect repellent were also issued—ten and one-half million overseas.

Water purification tablets for use in canteens were developed and 350,000,000 procured and issued. For purification of water in lister bags, 8,635,000 tubes of calcium hypochloride were issued—5,000,000 to overseas stations.

Because of the sharp limitation upon the manufacture of typewriters and office machines, the issue of typewriters for administrative purposes was curtailed and quantities authorized in Tables of Basic Allowances were drastically reduced. Rebuilt typewriters were obtained through the Procurement Division of the Treasury Department.

Subsistence

The procurement, storage, and distribution of food for the Army became increasingly difficult during the fiscal year 1943. The great expansion of the Army meant an increased demand by the War Department upon the available food supply of the nation.

The American soldier was well fed. The food he received was carefully balanced and well prepared. He was given all he wanted to eat. The individual soldier ate more than the individual civilian. His outdoor life, physical exercise, and rigorous training could be expected to have such a result. It was estimated that while the individual citizen consumed on the average $3\frac{1}{2}$ pounds of food a day, the soldier consumed over 5 pounds a day.

Despite the greater average individual consumption, however, the Army's demands upon the nation's food supply was not as large as many might think. For example, 12 percent of total meat supply was to be purchased by the Army in the calendar year 1943. Total Army requirements for canned goods came to 18.3 percent of the total expected commercial pack. Lend-Lease and other government requirements would take another 9.3 percent of canned foods. Eleven percent of the butter supply in the calendar year 1943 was expected to be purchased by the Army. Other demands are shown in the accompanying chart.

The reason for the relatively large demand upon canned goods supply was obvious. The soldier overseas ate two-thirds of his food out of cans. To keep this food moving to him all the time meant that a 9 months' supply had to be purchased. Keeping food moving continuously to the soldier within the United States and overseas was a major concern of the Army Service Forces.

The Quartermaster General in the procurement of all foodstuffs worked closely with the War Food Administration. Requirements were presented

CHART 14

TYPICAL MENUS AT AN ARMY CAMP

WEDNESDAY, DECEMBER 16, 1942	
MENU	
BREAKFAST	DINNER
Steamed Potatoes	Soup
Roast Lamb	Breaded Pork Chops
Roast Beef	Boiled Potatoes
Fresh Milk	Boiled Rice
Fried Eggs	Leafy Greens
Grilled Bologna	Sour Pickles
Hot Cakes	Roast Turkey
Butter	Bread
Coffee	Butter
	Chocolate Cake
	Coffee
TUESDAY, DECEMBER 8, 1942	
MENU	
BREAKFAST	DINNER
Grapefruit	Soup
Whole Wheat Bread	Breaded Pork Chops
Fresh Milk	Boiled Potatoes
Shirred Eggs	Boiled Rice
Racon	Leafy Greens
Butter	Sour Pickles
Coffee	Roast Turkey
	Bread
	Butter
	Chocolate Cake
	Coffee

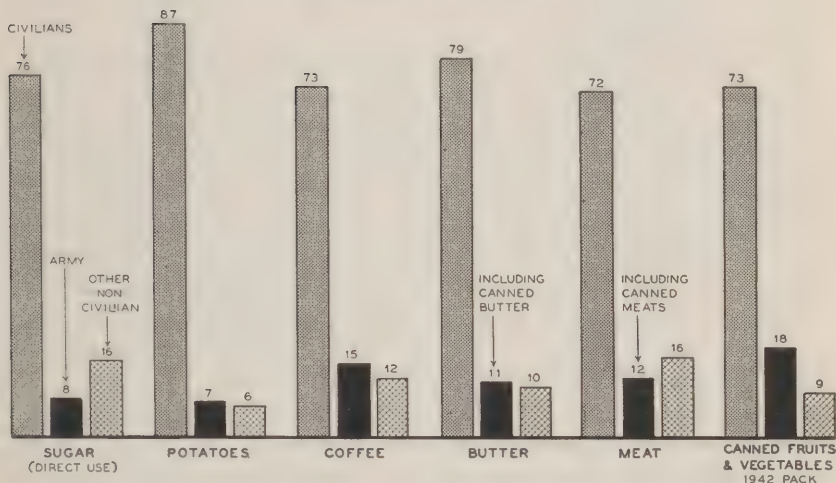
FRIDAY, DECEMBER 25, 1942	
MENU	
BREAKFAST	DINNER
Oranges	Roast Turkey
Fresh Milk	Boiled Potatoes
Racon	Boiled Rice
Hot Cakes	Leafy Greens
Butter	Sour Pickles
Syrup	Roast Turkey
Coffee	Bread
	Butter
	Chocolate Cake
	Coffee
TUESDAY, DECEMBER 8, 1942	
MENU	
BREAKFAST	DINNER
Oranges	Roast Turkey
Fresh Milk	Boiled Potatoes
Racon	Boiled Rice
Hot Cakes	Leafy Greens
Butter	Sour Pickles
Syrup	Roast Turkey
Coffee	Bread
	Butter
	Chocolate Cake
	Coffee

to the Administration and purchases made in accordance with that proportion of total supply allocated for Army procurement.

In general, the feeding of the Army within the United States was based upon mess menus prepared monthly by professional nutritionists in the Office of the Quartermaster General. These master menus served a dual purpose. They were used at Service Command headquarters as guides in the preparation of individual menus at Army posts; they were also the basis for determining present and future food requirements of the Army.

The critical and swiftly changing food conditions throughout the nation necessitated a constant revision in the specifications for various food items procured by the Army. Many new foods developed commercially were

CHART 15
ARMY FOOD REQUIREMENTS
COMPARED WITH FOOD SUPPLY
CALENDAR YEAR 1943



tested and adopted for Army use. A joint dehydration committee was set up during the year, composed of representatives from the Department of Agriculture, the War Production Board, and the Quartermaster Corps to select plants qualified to produce dehydrated foods. Much effort had to be given to obtaining the necessary machinery and other facilities for food dehydration. Green coffee and tea for the Army, Navy, Marine Corps, and War Food Administration were purchased during the year. Approximately 200,000,000 cans of canned fruits and vegetables were purchased. All requirements of the Army for such foodstuffs as yeast, flour, rice, canned meats, alimentary pastes, evaporated milk, dried fruits and emergency rations for the Army, Navy, Marine Corps, Veterans' Administration, Treasury Department, War Food Administration, Panama Railroad, and Army Exchange Service were purchased by the Quartermaster Corps.

The record 1942 pack of canned fruits and vegetables was moved from canners' warehouses into Army depots and commercial warehouses during the year. A public warehousing system was set up wherein subsistence supplies were stored in over 50 cities throughout the United States.

The number of market centers for the procurement of perishable foods expanded from 30 to 37 during the fiscal year. The number of installations served by these market centers grew from 173 to 535, and the value of procurement from 26.6 million dollars to 86.1 million dollars. The increasing amount of refrigerator space in overseas bases made possible a steadily increasing shipment of perishable foods overseas.

The market center system endeavored to purchase perishables in all available markets and to spread purchases as widely as possible geographically. The Army scheduled its procurement in harmony with seasonal production and stored certain perishables for consumption in slack seasons. Army market centers served not only Army posts, but also the Navy, the Marine Corps, the Merchant Marine, the Coast Guard, and the War Relocation Authority. In July, 1942, purchases at market centers for agencies outside the War Department amounted to some \$800,000. By June, 1943, this had risen to over \$14,000,000.

On February 1, 1943, the market centers took over the procurement of fresh fluid milk in the eleven southeastern states from Virginia to Texas. Previous fresh fluid milk had been purchased individually by Army posts and installations. Increasing shortages and growing demands of the armed forces in these areas made it necessary to control centrally the flow of milk within milk sheds and between different milk sheds. In this manner many camps which otherwise would have been without adequate fluid milk were well supplied. At the same time, the impact of Army demands on total milk supply was materially lightened and hundreds of thousands of dollars were saved. In the one month of April, 1943, the milk procurement market centers contracted for over 16½ million quarts of milk.

During the fiscal year 1943, field buying offices established in the major growing areas were of great assistance in the purchasing of fruits and vegetables. These field offices also were able substantially to reduce the time involved in the shipping and handling of fruits and vegetables.

A procurement scheduled was also worked out during the year for the procurement of frozen vegetables to serve outlying installations far from sources of supply or major markets. In this way fruits and vegetables were made available during all seasons of the year to posts which otherwise would have been dependent almost entirely upon canned foodstuffs.

Food shortages within the United States made it more important than ever for the Army to give the closest possible attention to the elimination of food waste in Army messes. A survey of mess practices was made during the year by the Office of the Quartermaster General. Over 196,000 man-meals at 38 mess halls were carefully checked for waste. A study was also made on absenteeism from meals.

War Department Circular No. 16, January 11, 1943, provided that the ration allowance at each post was to be based upon the number of men

CHART 16

ARMY MARKET CENTERS



actually present for meals rather than upon total strength reports. A 9 percent savings in food demands resulted from this change alone.

At the same time a vigorous campaign was launched throughout the United States to reduce food wastage by soldiers. Every man was cautioned to take only as much food as he thought he could eat, and servers were instructed to hand out only the amount each man wanted. Posters were displayed in all mess halls urging food conservation. Garbage cans were carefully checked in order to spot an increase in food wastage.

Of course food waste could be eliminated almost entirely if soldiers were fed only what they liked. It was found, for instance, that wastage of milk, ice cream, frankfurters, oranges, and pears was under 10 percent, while for rice, kale, and spinach, it might be as high as 50 percent. Many of these not too popular foods were nevertheless essential to good health and fighting trim. Special efforts were begun to inform soldiers of the necessity for eating certain foods.

For the soldier overseas, food was served on the basis of specially developed rations. These rations were carefully packed foodstuffs designed to be used under combat conditions or when special messing facilities were not available. At the beginning of the fiscal year there were three major kinds of rations—Types C, D, and K. Large scale procurement of Type K got underway during the year. Changes were made in these rations on the basis of experience and research.

A number of new rations, consisting chiefly of new combinations of components of the existing rations, were also developed to meet special needs. Among the most important of these were the 5-in-1 Ration (subsistence in one package for five men for one day) developed especially for use in tanks and other motor vehicles, the Mountain Ration, intended to provide a light compact ration for troops operating in cold climates or mountainous terrain and packed in 4-in-1 style, and the Jungle Ration, intended to answer the same purpose for troops operating in tropical climates and jungle areas. Procurement of all of these was under way by the fall of 1942.

Considerable experimentation was carried on with a modification of the Type K Ration for use in the desert and with a new Combat Ration, composed largely of dehydrated foods, for use as an alternative to the K Ration.

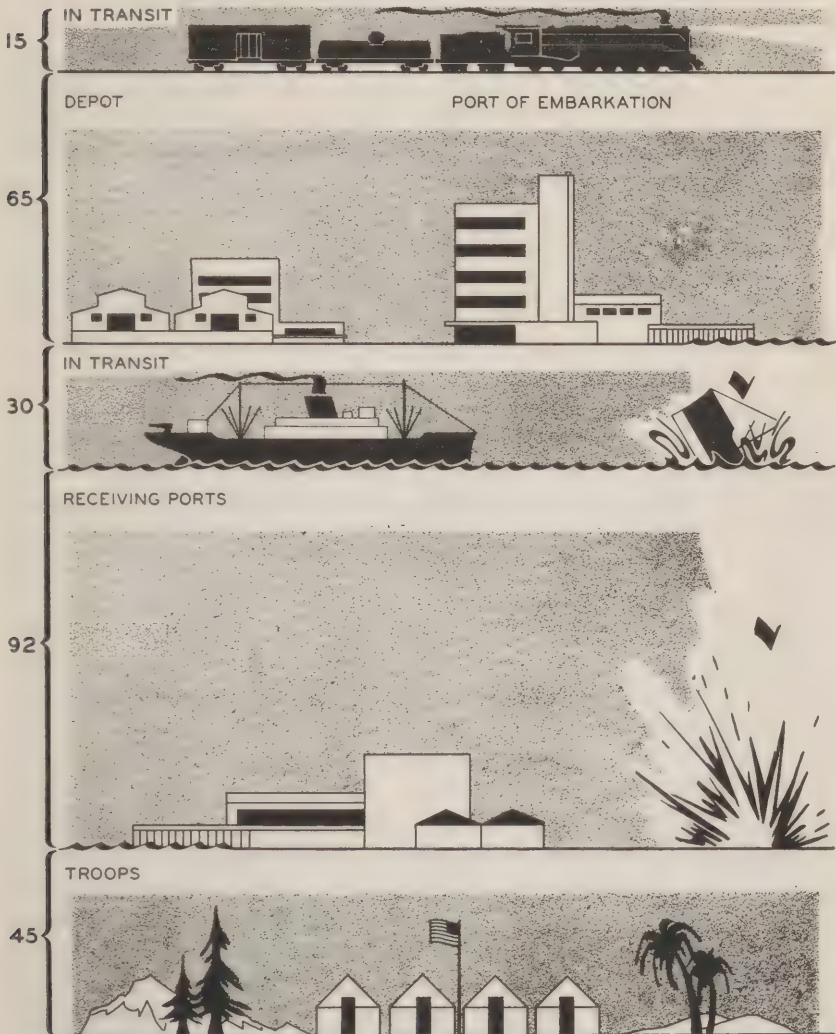
The trend toward multiplication of the types and varieties of special rations was countered in the fall of 1942 by a movement for reduction and simplification of the types already in existence. As a result there was developed and standardized at the close of the year a 10-in-1 Ration, which replaced the previous 5-in-1 Mountain and Jungle Rations.

During the year there were also developed and put into production several special rations for the Air Corps—a Bail-Out Ration for Parachute Emergency Kits, a Combat Lunch for the use of bombardment personnel on long missions, and a Life Raft Ration for fliers forced down at sea.

The reduction of the weight and volume of food products received much of the attention of those charged with the research and development of subsistence items. Many improvements were made in the various existing dehydrating techniques. A number of new dehydrated articles were

CHART 17

NUMBER OF DAYS' FOOD SUPPLY NEEDED TO INSURE UNINTERRUPTED
DELIVERY TO TROOPS



25 DAYS' EXTRA SUPPLY COVERS LOSSES FROM ENEMY ACTION, ETC.

272 TOTAL

developed. These included a milk which remained palatable when reconstituted and which would keep in any climate. Notable improvements were made in dehydrated butter and cheese, and in dehydrated fruits, which heretofore had deteriorated rapidly in moist tropical climates. Dehydrated foods were also introduced into the Combat Ration. One of the most important achievements in the field of dehydration was the perfecting of the technique of compression, which resulted in very considerable savings in storage and shipping space.

Procurement of Animals

The total capacity of the three Quartermaster Remount Depots was expanded during the year to accommodate more than 30,000 horses and mules. Approximately 12,000 pack horses were purchased during the year. Quartermaster officers were assigned to assist in organizing and maintaining the beach patrols using horses. More than 3,000 riding horses were issued for the use of Coast Guard personnel on beach patrol.

The Army also acquired about 9,500 war dogs during the year. Nearly 6,000 of these were trained and provided various Army units and installations.

Fuels

Difficulties in petroleum and fuel supply led to the creation during the fiscal year 1943 of a Fuels Branch in Headquarters, Army Service Forces. On May 26, 1943, these responsibilities were transferred to a newly created Fuels and Lubricants Division of the Office of the Quartermaster General which was made responsible for purchasing all fuel and lubricants for ground equipment.

During the fiscal year reports were prepared on War Department petroleum requirements for the years 1942, 1943, and 1944, for transmission to the Office of the Petroleum Administrator for War. The Fuels Branch worked with the Office of Lend-Lease Administration in expediting the shipment of oil equipment overseas for development of extraction and refinery facilities which would help supply army needs.

The Army Service Forces received information from the Petroleum Administration for War about the gasoline and oil storage and transportation situation throughout the United States. Military deliveries were accepted at various points so as to meet either storage or transport difficulties which threatened to interfere with maximum petroleum production. Thus, when storage facilities in the Gulf Coast Area were overtaxed and petroleum production had to be curtailed because of inadequate storage facilities, tankers were diverted to Gulf ports to take on gasoline for overseas supply.

The War Department cooperated closely with the Navy in the purchase of petroleum products as well as in their overseas shipment and storage. The purchasing personnel of both departments exchanged daily information about prices. Each six months a division of suppliers of heavy duty lubricating oil was arranged so that both Services could be assured of adequate supplies. An information coordinating committee was established during

the year to exchange information about packaging capacity for petroleum products. An Army-Navy petroleum pool was created on both the East and West Coasts to store petroleum products to meet Army and Navy special requirements.

In order to relieve the storage facilities of the petroleum industry in certain areas and to insure continuous supply for the Army, the Army Service Forces itself provided for the storage of sizeable quantities of petroleum products at strategic locations throughout the United States. Petroleum at these storage points was to be available to the Army on call twenty-four hours a day.

In supplying gasoline and oil to the North African Theater of Operations, two problems in particular were encountered. One was the provision of adequate supplies along the Eastern Seaboard to insure the most rapid shipment of requirements to North Africa. With the full cooperation of the petroleum industry, an uninterrupted supply of petroleum products was provided.

In the second place, the packaged fuel requirements for the North African Theater of Operations far exceeded the filling facilities of the petroleum industry. It was also difficult to obtain the required number of 55-gallon and 5-gallon cans. The lack of adequate storage facilities overseas and the nature of early amphibious operations necessitated the packaging of a large proportion of the gasoline and oil that was delivered. Such make-shifts were resorted to as filling drums and cans at Quartermaster depots until the petroleum industry had developed the necessary fill lines and adequate storage facilities had been provided overseas.

A new type of supply contract was initiated during the year to provide storage on deep water of greases and lubricants at Ports of Embarkation. This storage was made available by the oil industry at little cost to the Government. It provided a means of instant loading to meet unexpected demands for convoys. Arrangements were effected with the oil industry for the storage of supplies of packaged fuel, particularly 80 octane gasoline, on deep water. These supplies are immediately available on demand by Ports of Embarkation.

As a means of reducing the shipping requirements for the overseas transport of petroleum products—which on occasion amounted to 50 percent of all shipping demands—the War Department cooperated with other agencies endeavoring to develop overseas petroleum supplies. Plans were made for the rehabilitation and further development of recaptured oil fields in the Southwest Pacific and other areas. Points of potential oil resources were determined and plans made for experimental drilling. In addition, in the Middle East the needs of American Forces for petroleum products were provided by British agencies.

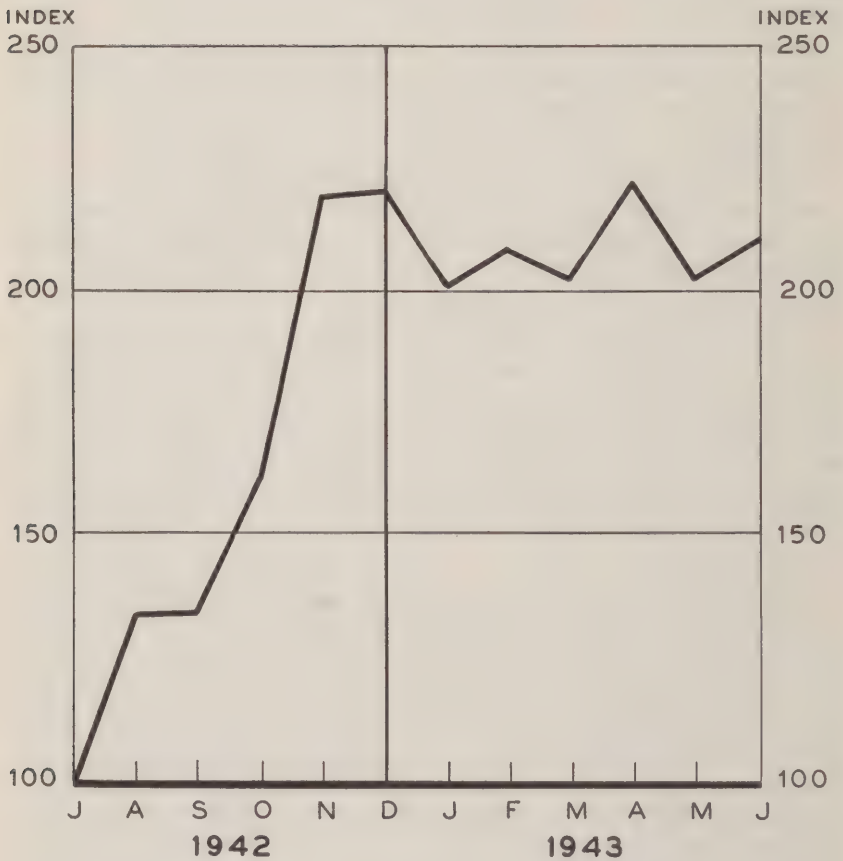
During the fiscal year the War Department reduced its requirements for fuel oil. Primary attention was given to converting heating facilities in the area of most critical oil shortage as defined by the Petroleum Administrator for War. Along the Atlantic seaboard facilities at Army posts and hospitals with an estimated annual consumption of 306,659 barrels of fuel oil were

CHART 18

INDEX OF PROCUREMENT SIGNAL CORPS

FISCAL YEAR 1943

JULY 1942 = 100



converted to other fuel, primarily coal. Conversion of facilities requiring an additional 161,905 barrels was planned and begun before the end of the year. The total savings thus achieved amounted to 56.4 percent of total fuel oil requirements by Army posts. Practically 100 percent of the facilities capable of conversion were shifted to other fuel consumption. In addition, Army owned manufacturing establishments along the Atlantic seaboard converted their heating systems to save another 234,000 barrels of fuel oil. Contractors were also encouraged to shift from oil.

Many Army and Navy specifications were standardized during the year for such products as brake fluid, engine lubricating oil and diesel oil. Lighter fluids such as gasoline naphtha were substituted for the use of heavier oils. No. 2 fuel oil replaced No. 50 octane fuel for cooking and heating purposes in certain overseas areas. New methods of packaging lubricants were introduced. Experiments were also conducted in the use of fabric containers for gasoline.

Special efforts were made during the year to conserve the Army demand for bituminous coal. The use of lignite and sub-bituminous coal was promoted in many areas. Mexican cord wood instead of coal was used for heating at border posts. The substitution of a colloidal fuel of 40 percent bituminous coal and 60 percent bunker "C" for many military uses was studied during the year.

In the fiscal year 1943 the War Department purchased some 8,600,000 tons of coal, of which 86 percent was bituminous, and 12 percent anthracite. The total procurement represented approximately 2 percent of the country's production. About 5 percent of the coal purchased was shipped outside the United States—mainly to Alaska.

A program was developed before the end of the fiscal year to make Alaska self-sufficient in coal supply. This not only will conserve transportation requirements but will also relieve the drain upon the coal supplies of the Pacific Northwest area.

In order to cooperate with the "Buy now" campaign inaugurated by the Office of the Solid Fuel Coordinator, the War Department enlarged storage facilities at all posts in order to accommodate large quantities of fuels. About 65 percent of the Army's annual requirements had been accepted by September 30, 1942. This proved to be a great relief to the nation's transportation system during the winter months.

Signal Corps

The procurement of all types of communications, meteorological, and photographic equipment doubled during the fiscal year 1943. Peak deliveries occurred in April, 1943, which was slightly better than the previous high point in December, 1942.

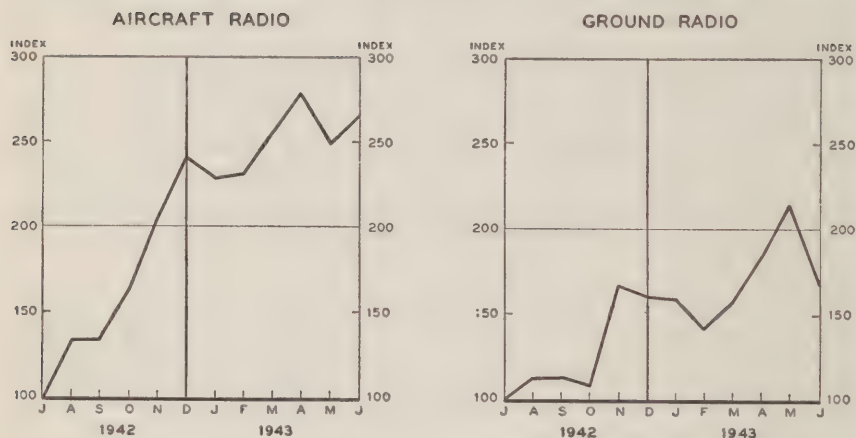
The greatest expansion in procurement during the year took place in the field of aircraft radio. In June, 1943, deliveries were 165 percent larger than in July, 1942. In the month of April the increase was even larger—177 percent greater. The production of ground radio sets was twice as large in

CHART 19

INDEX OF RADIO PROCUREMENT

FISCAL YEAR 1943

JULY 1942 = 100



May, 1943, as in July, 1942. In general, however, procurement did not expand as much for ground radio equipment as for aircraft equipment.

Corps of Engineers

Engineer procurement of construction equipment and miscellaneous supplies was twice as great in June, 1943, as in July, 1942. Indeed, in the one month of August, 1942, deliveries were 139 percent larger than in the preceding month. This remarkable expansion was occasioned by the need to acquire large quantities of equipment and supplies in a hurry needed for the North African invasion. Throughout most of the year deliveries ran about twice the volume received at the beginning of the fiscal year.

The achievements of Engineer procurement during the year are illustrated in the single item of searchlights. This item presented many production problems. In the last six months of the fiscal year 1942 only 950 searchlights were delivered to the Corps of Engineers. In the second six months of the fiscal year 1943, however, deliveries were four times greater.

Medical Department

The procurement of medical supplies reached an all-time peak of \$500,000,000 during the fiscal year 1943. This represented more than a threefold increase over the volume of purchases in 1942, which came to \$150,000,000.

No medical development of the present war aroused more interest than the use of dried human plasma as a substitute for whole blood. The technique of converting human blood into dried plasma was perfected before America entered the war. Its life-saving qualities and its manifold uses were many

CHART 20

INDEX OF PROCUREMENT CORPS OF ENGINEERS

FISCAL YEAR 1943

JULY 1942 = 100

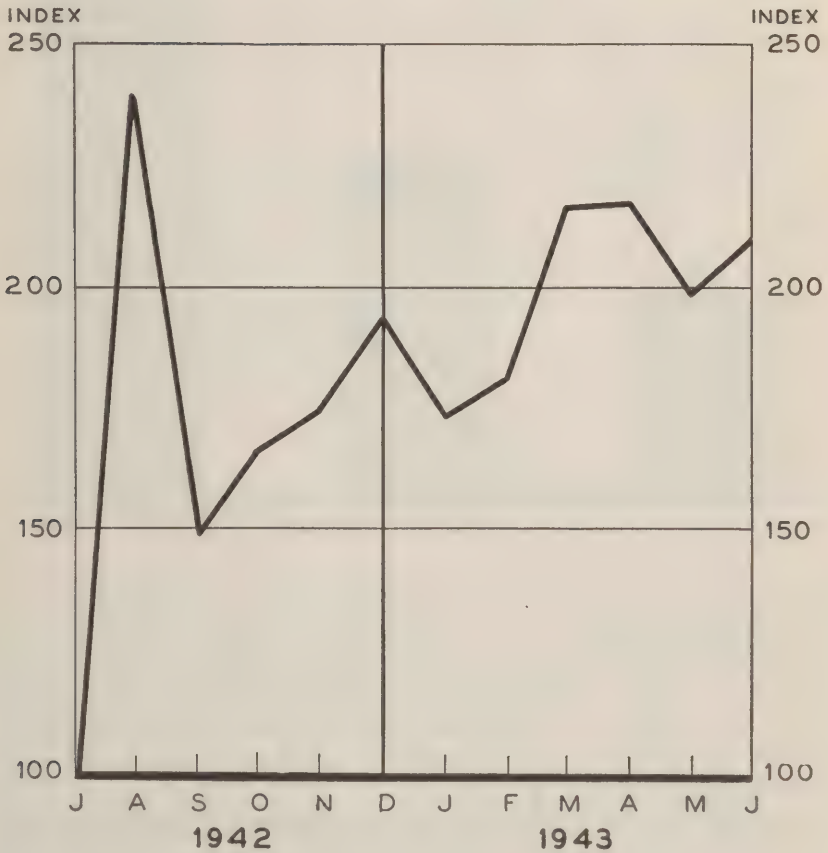
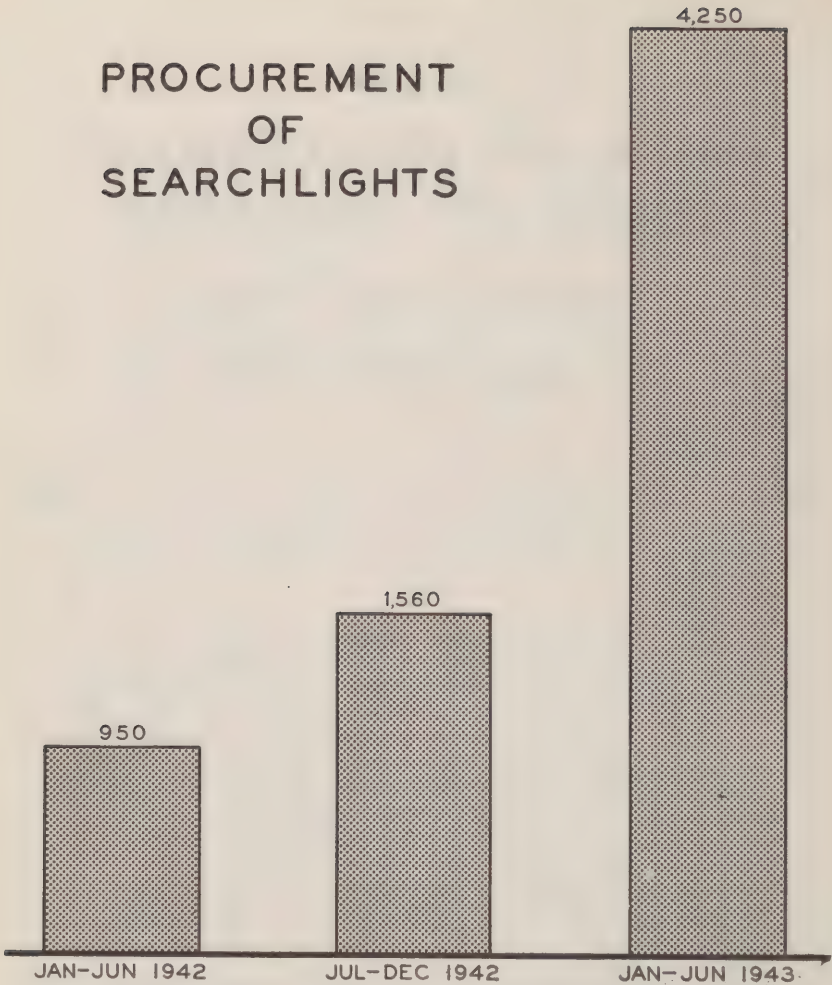


CHART 21

PROCUREMENT OF SEARCHLIGHTS

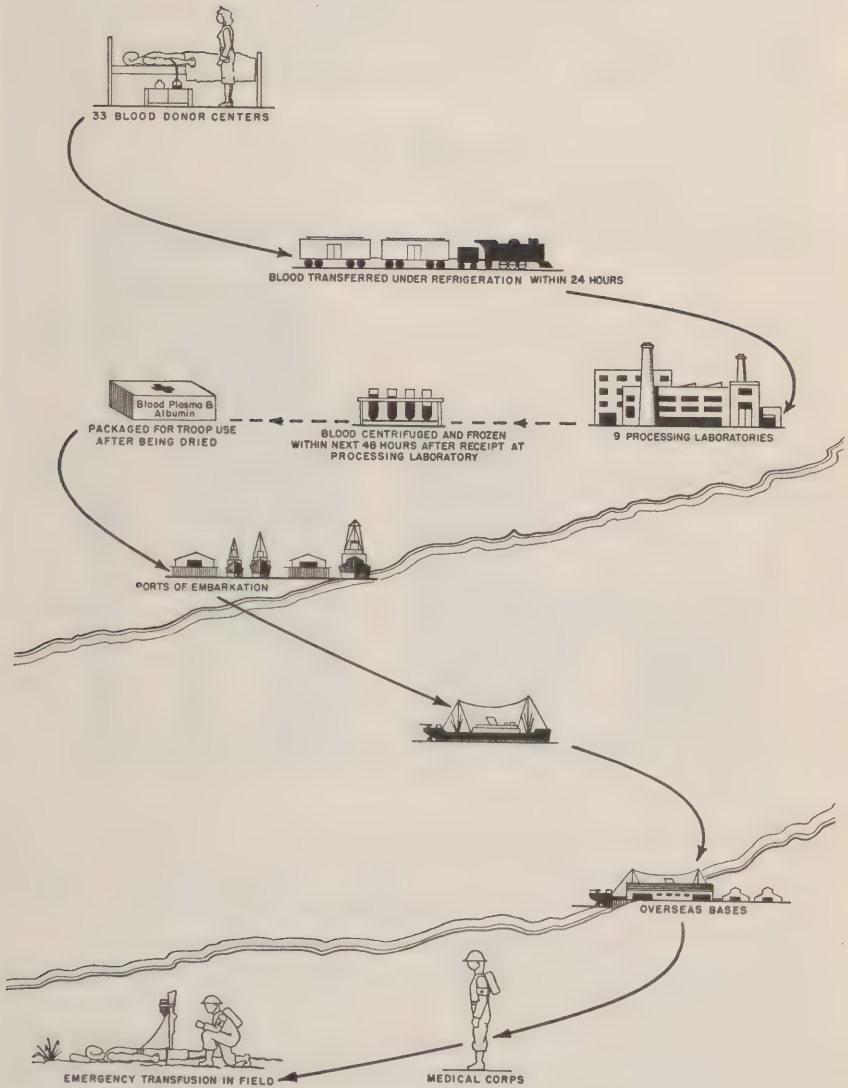


times demonstrated in battle. Dried plasma became a principal item in medical procurement. The man in the street instinctively responded to the appeal of the American Red Cross for donations of blood to be converted into plasma. The Red Cross organized 33 centers to accommodate 4,000,000 blood donations in 1943. By June 30, 1943, blood donations numbered 90,000 weekly. This program enabled the Army and Navy to meet their 1943 requirements.

Formerly, only one contractor was equipped to process plasma. Through the efforts of the Medical Department, other contractors were given the privilege of using the process for the duration of the war without payment of royalty to the patent owner. Production of plasma increased over 100 percent in the last six months of the fiscal year. Requirements of the Army and Navy were larger than deliveries in the early months of the year,

CHART 22

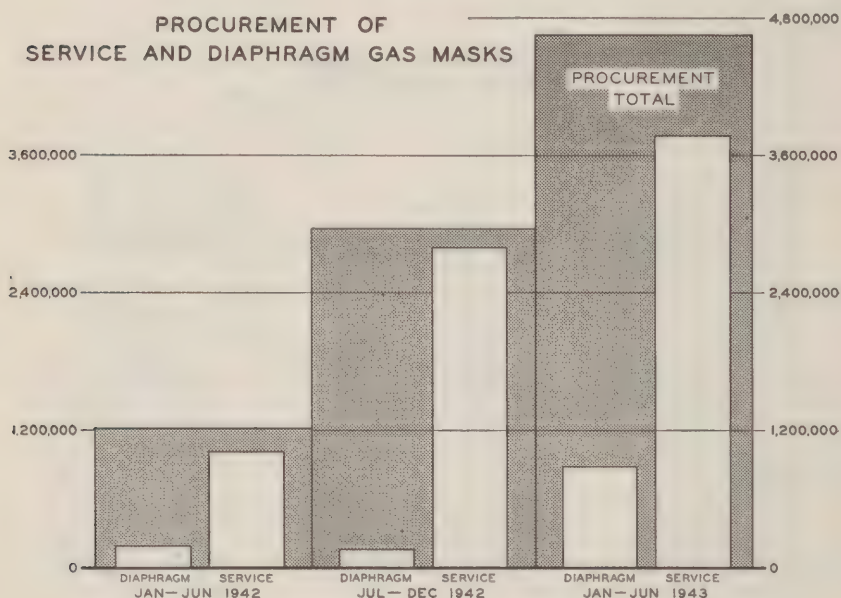
BLOOD PLASMA SAVES LIVES TRANSFUSIONS IN FIELD PROVIDED BY MODERN METHOD



so there developed a 50 percent deficiency in production. This was reduced to about 6 percent by June 30, 1943.

Several important specialty items engaged the attention of the Medical Department during the year. The regulation providing that auxiliary spectacles be issued during the training period placed a sudden heavy drain on production facilities. Repairs to spectacles also became a matter of serious consideration. Steps were taken to set up repair and replacement units at all important overseas theaters. A portable repair unit for field use was included in two standard medical chests, and a stockpile of supplies for repairs for overseas requirements was set up at the Binghamton, New York, depot. Attention was also given to the provision of orthopedic appliances, artificial eyes and limbs.

CHART 23



Chemical Warfare Service

The Chemical Warfare Service in general procured supplies at higher levels than those realized at the beginning of the fiscal year.

In the field of warfare gases, the procurement of more than 7,500 tons of the chemical agent HS (mustard gas) in May, 1943, was twice the quantity received in May, 1942.

Smokes, incendiary bombs, and other materials used by the Air Forces and the Ground Forces represented more than 50 percent of the dollar volume of all Chemical Warfare procurement.

Introduction of new material by the enemy and contemplated changes in strategy made necessary the manufacture of new items developed by the Chemical Warfare Service.

Of major importance was the new lightweight gas mask, which was

evolved by the Service for jungle and desert warfare. The canister for this mask contained a new type of charcoal developed to make it effective against all known agents, including HCN and CC. Plans were completed to convert the assembly lines producing the standard gas mask to the lightweight mask with the expectation that full production would be attained before the close of 1943.

During the fiscal year the noncombatant gas mask program as set up was completed. The program required 20 assembly plants, all of which were equipped for this particular purpose, to manufacture the special type gas mask required by the Office of Civilian Defense. Several of the plants were converted to military needs, and the balance were kept in stand-by condition.

Assistance was given to the War Production Board in the preparation of Limitations Orders L-57 and L-115 under which certain control of manufacture and sale of gas masks, anti-gas devices and simulated incendiary bombs was exercised by the Chemical Warfare Service.

Transportation Corps

The large-scale procurement of transportation equipment and supplies by the War Department did not get underway until the fiscal year 1943. As the American Army overseas began to reach sizeable proportions, and as operations were conducted in different undeveloped areas, the need for harbor craft of all kinds and of railroad rolling stock expanded rapidly. In June, 1943, deliveries of transportation equipment to the Army Service Forces were 174 percent greater than in the month of January of the same year.

V

PROCUREMENT PROBLEMS

Once an article was standardized for procurement, the purchasing procedures of the Army Service Forces were intended to find industrial facilities capable of producing or assembling the military equipment desired by the War Department. Competent productive facilities, however, were by no means the only problem to be faced. Output depended in large measure upon the available supply of raw materials. In order to increase this supply, it was necessary to conserve the use of critical raw materials through substitution or reduced content. Labor supply and labor relations problems also were encountered.

FACILITY PROBLEMS

Many items purchased by the Army Service Forces were the same as or similar to civilian type goods. Sometimes the existing facilities producing these items were inadequate for the new demands, whereupon an expansion had to be arranged. For other items, however, there was no civilian counterpart. This was especially true of the weapons procured by the Ordnance Department. In these instances existing manufacturing facilities had to be converted to war output, or wholly new facilities constructed.

Facility Surveys

In locating usable industrial facilities with which to let contracts, the Technical Services of Army Service Forces studied available manufacturing establishments and recorded pertinent information about them. The basis of procurement planning activity carried on by the War Department from 1920 to 1940 was the facility survey. With the advent of the defense program, facility surveys were brought up to date and new ones made as procurement activity grew. The former procedure was continued. Facility information was recorded in procurement district offices and copies forwarded to the Chiefs of Technical Services. These offices in turn sent the information to the Office of the Under Secretary of War before March 9, 1942, and then to Headquarters, Army Service Forces.

In August, 1942, it was decided that the central facility records were of little practical use in the procurement program of the Army Service Forces and their maintenance at Headquarters was discontinued. The files accumulated over a period of twenty years were transferred to the National Archives in December. The procedure in filing facilities survey reports in Headquarters, Army Service Forces was too slow to be useful in indicating the extent to which any particular industrial facility was engaged in war production. Moreover, the information provided on these forms had no immediate bearing upon any administrative activity of the Army Service Forces. For these reasons the Technical Services were informed that they need no longer submit such facilities information.

At the same time negotiations were begun to arrange for the War Production Board to assume responsibility for collecting information about available industrial facilities for the use of local procurement offices of the Army Service Forces. In a letter dated September 11, 1942, the Chairman of the War Production Board agreed that henceforth the local offices of the War Production Board would conduct such surveys as were necessary to determine availability of industrial facilities to participate in the war program. Existing facility records already available in Procurement District Offices of the Army Service Forces would be maintained. Any additional information desired by these Procurement District Offices, however, would be obtained from the local offices of the War Production Board. Circular No. 88, Headquarters, Army Service Forces, November 25, 1942, directed that the regional offices of the War Production Board would make all future general facility surveys. A new plant facilities record form for the joint use of the Army and the War Production Board was approved.

Types of Facilities Problems

As already mentioned, the Ordnance Department found it necessary to bring about large scale conversion of industrial facilities to the manufacture of munitions, as well as to have new facilities constructed for the output of powder, tanks, and artillery. For the most part the construction of these new facilities was completed or well under way by the beginning of the fiscal year 1943.

Much the same situation as that of the Ordnance Department faced the Chemical Warfare Service. New facilities had to be constructed to turn out necessary chemical agents and other supplies. During the fiscal year 1943 three new arsenals were completed and began operations. These were the Huntsville Arsenal costing \$82,000,000; the Pine Bluff Arsenal costing \$60,000,000; and the Rocky Mountain Arsenal costing \$64,000,000. These three arsenals had a combined annual production capacity of more than 100,000 tons of toxic agents, more than 14,000,000 chemical shells and bombs, 6,900,000 smoke shells, 5,000,000 grenades and incendiary bombs, 2,000,000 oil incendiary bombs, and 18,000,000 smoke pots and bombs. In addition, existing facilities of the Chemical Warfare Service were enlarged during the year at the Niagara Falls Plant, the Midland Plant, and the St. Louis Plant.

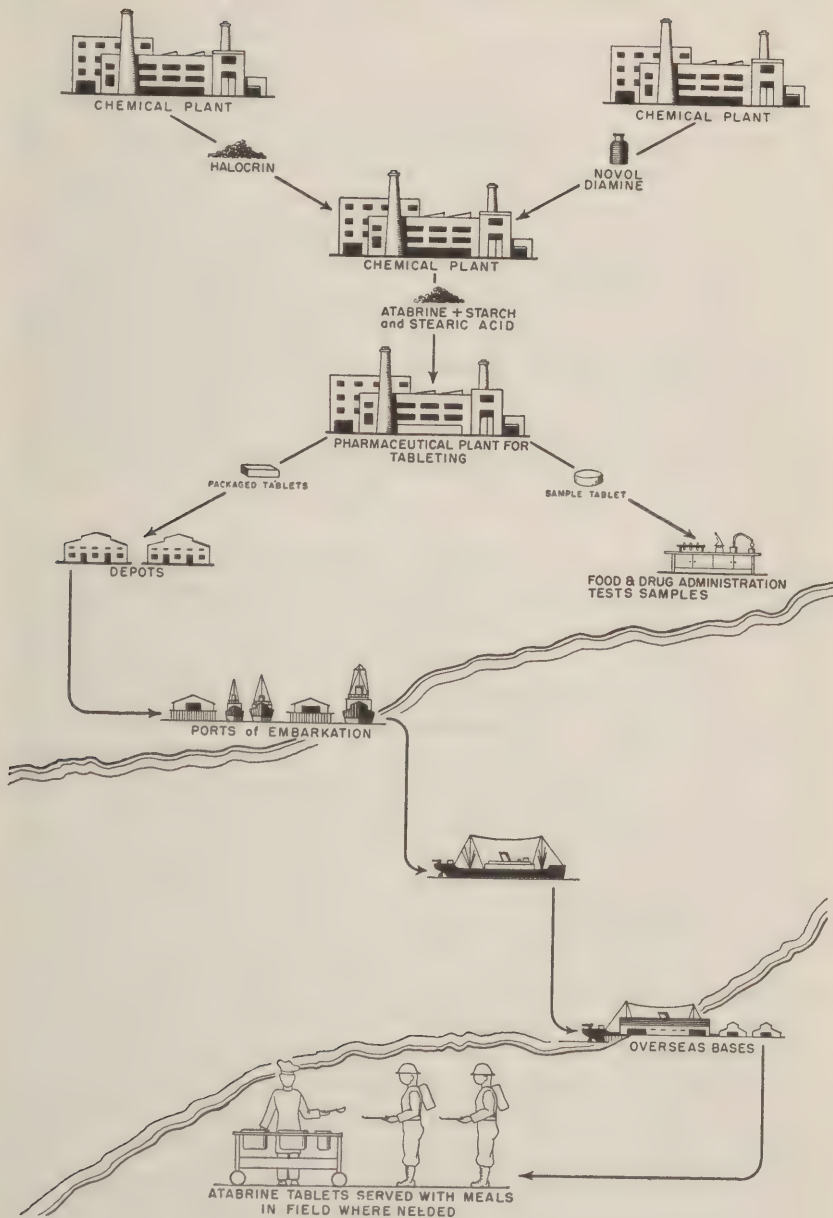
Even the procurement of civilian type goods often presented special production problems. Old methods, for example, had to be discarded in the manufacture of adequate supplies of synthetic resin raincoats instead of rubber raincoats. Virtually new industries were created in the production of chemicals and other safeguards against insects and disease.

On July 1, 1942 there were sixteen critical component parts of materials used in Signal Corps equipment for which the productive capacity was known to be less than needed. While these requirements doubled during the fiscal year, productive capacity rose to 120 percent of requirements.

New developments and improvements in communications equipment necessitated a continual conversion and expansion of facilities. The increased

CHART 24

ATABRINE TO FIGHT MALARIA THE ACCEPTED SYNTHETIC ALTERNATE FOR QUININE



procurement of radar equipment, for example, required the establishment of special facilities for radically different types of coaxial cable, special purpose electronic tubes, special types of resistors, and magnets which were twice as strong at the same weight.

At the beginning of the fiscal year 1943 the radio industry had been changed to a large extent from the basic assembly type of industry which had existed in peacetime to the first stage of mass production of military types of production. In peacetime the radio industry was divided into three general groups. The first group consisted of relatively small industrial facilities engaged in the design, development, and production of high quality radio equipment for communication purposes. These companies had advanced technical knowledge and experience but were comparatively inadequate in their productive capacity. The second group was made up of the technically experienced facilities with large manufacturing capacities. These were the "Big 5" of the communications industry—Western Electric Company, General Electric Company, Westinghouse Electric and Manufacturing Company, Radio Corporation of America, and the Bendix Radio Corporation. These firms were heavily loaded with contracts by the end of the fiscal year 1942. The third group of facilities consisted of the manufacturers of "home radio equipment" who were accustomed to make relatively simple radio receiver equipment and had large production capacity for such output.

The management and engineering capabilities of the first and second groups of manufacturers had to be used to educate smaller and inexperienced facilities, especially those in group III, in the production of standardized military equipment. In general, the policy was followed of relieving the "Big 5" companies of contracts for those items already standardized and adequately covered by manufacturing information. New contracts were let with the group III manufacturers, or they received substantial subcontracts. Every effort was made to pool the technical and productive experience of the entire industry in order to obtain maximum war output.

The facilities of existing wire manufacturers had to be expanded in order to meet war requirements and four new suppliers were brought into the field of wire production.

In order to obtain adequate supplies of atabrine for the Army and for Lend-Lease, the Medical Department had to find additional production facilities. Previously production had been confined to one manufacturer, whose total output was inadequate. Consequently, a number of chemical and dye plants were converted to the manufacture of the components of the atabrine, while other plants took over the final steps in processing and tableting. The net result was that production increased 60 percent from April to June, 1943. It was expected that the production of atabrine during the calendar year 1943 would approximate minimum military and civilian needs.

The quest for adequate supplies of drugs and equipment led Medical Department procurement officers far beyond the usual field of medical con-

tractors. Large silverware manufacturers converted their plants to the production of surgical instruments, and their output helped prevent a sizable shortage in surgical instruments. A shortage of surgical dressings was averted by establishing a new company whose entire output was taken by the Medical Department.

Review of New Facilities

Early in the procurement program the Office of Production Management, predecessor of the War Production Board, created a Plant Site Board to clear projects for the construction of new facilities to manufacture war materiel. The emphasis in this clearance was upon desirable location of proposed plants from the standpoint of available labor supply, housing and transportation facilities, general community facilities including water supply and schools, and similar factors. During the fiscal year 1943 the emphasis was changed in the consideration of additional industrial plants for the production of war supplies. The shortage of critical materials led to careful scrutiny of new projects to make certain not only that the raw materials were available for the construction of the plant, but also that raw materials would be available for the plant's operation upon completion. The War Production Board set up a facility clearance board and a facility review committee replacing the former Plant Site Board on October 19, 1942.

The Army Service Forces reviewed those plants that were unfinished by the fall of 1942 and directed curtailment wherever it was necessary and economical to do so. Only a minimum number of new facility projects were submitted to the War Production Board after October, 1942.

The cut-backs in the Army Supply Program during 1942 were reductions in the procurement goals of the Army Service Forces rather than reductions in current rates of industrial output. The actual monthly production of major items in the Army Supply Program rose month by month through April, 1943. At the time of the last reduction in February, 1943, the current rate of deliveries to the Army Service Forces was not adequate to realize even the diminished procurement goals. In other words, the cut-backs in the Army Supply Program lowered requirements or production objectives rather than production schedules.

In spite of this general situation, the Army Service Forces did have certain facilities in production during the fiscal year 1943 at a rate calculated to meet the earlier procurement goals. In a few instances, consequently, it was necessary to reduce actual production schedules. Approximately 90 facilities were involved in these cut-backs. Of these 90 facilities, 84 were restored to use by some other part of the war program, principally by the aircraft industry, by the Navy, and by the Maritime Commission. All but five of these 84 facilities were shortly in full capacity use. The plants which were not converted to other production were in the ammunition and explosive field. These plants were not readily convertible to other production. Also, they were kept intact as reserve capacity to meet enlarged ammuni-

tion needs that might arise when large-scale fighting by American troops should get under way on all fronts.

The Army Service Forces cooperated with the War Production Board in seeing that the facilities no longer needed for certain parts of the ground supply program were transferred to other parts of the war program which could make use of their particular capacity.

In the winter of 1942-1943 serious difficulty was encountered in completing the construction of new manufacturing facilities because of delays in the delivery of critical components such as fixtures, pipes, and heating units. Various priorities had been granted to different programs for the construction of new productive facilities. The result was the partial completion of many plants. What was needed was a proper scheduling or timing of deliveries of necessary components in order to finish the required facilities.

Because of this situation, the War Production Board began to schedule the more critical components needed in industrial plants under Conservation Order No. M-293. The Army Service Forces assisted in the execution of this scheduling by informing the W.P.B. of the relative urgency of some 600 uncompleted facility projects. Originally an urgency list was to be prepared every two months. By the end of the fiscal year 1943 the construction program was so near completion that revision of the urgency list appeared to be necessary only about every six months. The urgency list would have been more effective if it had been started earlier.

The urgency list of manufacturing facilities was prepared in each Technical Service, reviewed by Headquarters, Army Service Forces, and submitted to the War Production Board. The original attempt to frame a single list for the entire productive facility program of the Army Service Forces was abandoned because of the administrative complexity of the task.

In addition to preparing the urgency list, the Technical Services and Headquarters, Army Service Forces inspected the progress of productive facility construction and expedited completion of the more important projects in every way possible. At the same time careful attention was given to guarantee observance by contractors of the "List of Prohibited Items for Construction Work."

One difficulty encountered in expediting completion of the construction program was identifying Army orders on the order boards of manufacturers and in W.P.B. schedules. To get around this difficulty, the use of a symbol to be given all projects sponsored by the Army Service Forces was planned. This symbol was to be given the prime contractor for the construction project and in turn transmitted by him to all subcontractors and suppliers. The idea was abandoned because it was decided that by the time the symbol reached the order boards of manufacturers, the building program of the Army Service Forces would be virtually completed. If some identifying symbol had been used from the beginning of the construction program, it would have been of considerable usefulness in expediting the completion of facility projects.

Machine Tools

During the first half of the fiscal year 1943 the demand for machine tools continued to rise and the problem of distribution remained troublesome. Under General Preference Order E-1-b of March, 1942, the War Production Board provided that 75 percent of the output of machine tools should go to the Armed Services and their contractors. Within the limits set for the Army Service Forces, the Production Division of Headquarters arranged that each Technical Service should receive a definite percentage of the quota for each type and size machine. The Technical Services assigned an urgency number to their contractors. Lists of such assignments were consolidated into a Master Preference List.

Whenever a Technical Service had an urgent need for a particular kind of machine tool not immediately available, it requested the assistance of the Production Division of Headquarters. This division reviewed the order boards of machine tool manufacturers as reported to the War Production Board. If some other Technical Service or some other armed service was scheduled to receive such a machine tool, the possibility of a diversion was explored. During the last half of the fiscal year the machine tool section of the Production Division handled 3375 diversion requests. The volume was nearly twice this during the first half of the year.

The Army Service Forces cooperated with the War Production Board in arranging to let pool orders to machine tool manufacturers in order to guarantee maximum production. The needs of the Technical Services were reviewed in advising about pool orders, and the available pool supply was studied as a means of meeting demands by A.S.F. contractors.

The needs for new machine tools declined during the second half of the fiscal year. For example, by June 30, 1943, the new orders of Signal Corps contractors for machine tools had dropped to two-thirds of the monthly rate of machine tool deliveries to these contractors. Emphasis thereafter was placed upon production of the more critical tools which were still scarce.

Cooperative effort between the Army Service Forces and the War Production Board was also directed during the year to expansion in the production of gages, and to problems in the distribution of cutting tools, machine tool attachments, hand tools and abrasives.

In the spring of 1943 the joint efforts of the War Department and the War Production Board were intensified to eliminate idle capacity in the use of critical machine tools. A year earlier the War Production Board had begun a series of surveys in various parts of the country of available critical machine tools that were not being fully utilized. This information as accumulated by local offices of the War Production Board was made available to procurement district offices and to prime contractors. It was used in an extension of the practice of subcontracting. Under a joint directive signed by the Under Secretary of War, the Under Secretary of the Navy, a Vice President of the Defense Plant Corporation, and the Chairman of the War Production Board in February, 1943, agreement was reached upon a procedure for transferring machine tools from one plant to another. The War

Production Board undertook to locate idle machine tools and to direct their transfer. No such transfer from a War Department contractor to another contractor was to be effected, however, without prior clearance of the War Department. For the Army Service Forces machinery for this clearance was set up in the Production Division.

CONTROL OF RAW MATERIALS

Beginning in February, 1941, the purchase of raw materials and of component parts by War Department contractors and subcontractors was controlled by a system of priorities. Under delegation of authority from the Office of Production Management, predecessor of the War Production Board, the Army and Navy Munitions Board had determined the relative priority of War Department procurement activities. All War Department contractors received A-1 priority in purchasing materials, broken down in subclassifications of A-1-a to A-1-j. Different procurement programs of the Army Service Forces received different subclassifications of A-1 priority.

With the beginning of large-scale procurement after December 7, 1941, the priority system proved more and more unsatisfactory. The demands for raw materials under various preference ratings exceeded the available supply. To supplement the system of priority control, the War Production Board through some of its industry branches began to designate what orders the fabricators of steel, aluminum, and other metals should honor.

Then on June 22, 1942, the War Production Board required all users of metals, including War Department contractors, to obtain materials under the Production Requirements Plan. Under this plan all metal consumers submitted directly to the War Production Board a report on past metal consumption, anticipated needs, and the preference rating pattern of the orders on their books. Adjustment of these demands to available metal supplies was to be made by the War Production Board. Review of the demands, in the first place, was to be undertaken by some 200 product group committees which were hastily set up in June and July, 1942. The Army Service Forces was responsible for organizing committees to consider the needs for materials reported by War Department contractors making purely military items. The Army Service Forces further was expected to name representatives to sit with the other product group committees considering items in which it was interested. These committees were set up as desired by the War Production Board. Then it was decided by the War Production Board to postpone the effective date of the Production Requirements Plan from July 1 to October 1, 1942.

Administrative relationships between the Army Service Forces and the War Production Board in reviewing needs for raw materials and general industrial supplies were organized on a standard basis in October, 1942. At this time the Chairman of the War Production Board set up Industry Division Requirements Committees for each industry division (formerly branch) organized by the W.P.B. With other government agencies the Army Service Forces provided an official representative to sit on these committees. These

representatives were on the staff of the Production Division in Headquarters, Army Service Forces.

On November 2, 1942, the Chairman of the War Production Board further announced a new metal control system called the Controlled Materials Plan. Under this system of control, limited to steel, copper, and aluminum, various claimant agencies, including the Army Service Forces, presented their material requirements as a whole to the War Production Board and in turn were allocated total amounts of materials by quarterly periods. It was the responsibility of the claimant agency then to allot its authorized amount of materials to contractors and sub-contractors. For a certain category of products termed Class B Products, such as valves, fittings, motors, generators, and other general industrial supplies, the Army Service Forces was expected to present general requirements expressed in dollars. The actual producers of these products received allocations of materials directly from the War Production Board.

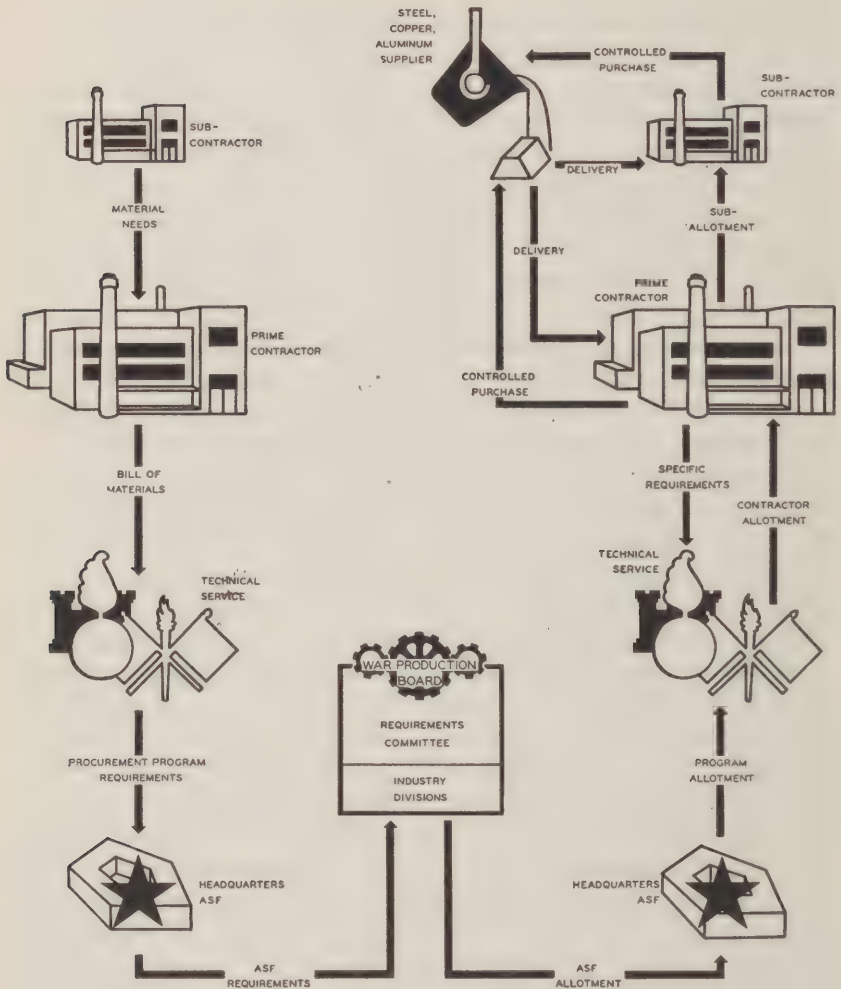
The Controlled Materials Plan was put into partial effect on April 1, 1943, and into complete effect on July 1, 1943. During the fiscal year the Army Service Forces devoted much attention to perfecting its organization and procedures in order to fulfill its responsibilities under the Plan.

A major problem of the Army Service Forces under all systems of materials control was to develop accurate requirements data for presentation to the War Production Board. Requirements information desired by W.P.B. was of three kinds. The first kind was data about demands for basic industrial materials such as copper, carbon and alloy steel, aluminum, magnesium, tungsten, calcium carbide, lactic acid, silicon, etc. In the second place, the Army Service Forces had to present information about its requirements for general industrial supplies or "components" such as valves and pipe fittings, vacuum tubes, compressors and pumps, electric motors and generators, dry-cell batteries, etc. These were products which might be used in War Department equipment as well as by Navy contractors, Maritime Commission contractors, and producers of essential civilian items. In the third place, the Army Service Forces provided requirements data about civilian-type end items such as photographic film, motion picture projectors, office machinery, power lawnmowers, and cutlery. In general, the output of this third type of items was subject to restrictive control by the War Production Board. But this control could not be exercised without adequate information from the War Department and other agencies about their essential needs in such equipment for the conduct of the war. During the fiscal year 1943 more than 200 studies of Army requirements for various items ranging all the way from copper, steel, and aluminum to power trucks, photographic film and pigeons, were undertaken by the Army Service Forces. In the second half of the fiscal year alone, some 166 reports on various types of requirements were completed and presented to the War Production Board.

Requirements data were ordinarily developed in consultation with the appropriate Industry Division of the War Production Board in order that requirements submitted by the A. S. F. might be on a comparable basis to those submitted by other agencies.

CHART 25

OPERATION OF THE CONTROLLED MATERIALS PLAN



Requirements by the Army Service Forces for carbon steel, alloy steel, copper, and aluminum under the Controlled Materials Plan in the second quarter of 1943 were submitted to the War Production Board in February. Requirements by quarters from July 1, 1943, to June 30, 1944, were submitted on March 31 and revised April 20, 1943. Requirements for thirteen types of carbon steel products, for eleven types of alloy steel products, for six types of copper products and for seven types of aluminum products were presented under three main categories—procurement programs, construction programs and industrial maintenance, repair and operation. The classification of industrial programs was as follows:

I. *Ordnance Department*

A. Ammunition Branch

1. Ammunition—gun ammunition through 105 mm.
2. Other gun ammunition and mortar ammunition
3. Bombs and pyrotechnics (air)
4. Other ammunition

B. Artillery Branch

1. Artillery
2. Miscellaneous requisitions

C. Small Arms Branch

1. Materiel
2. Miscellaneous requisitions
3. Ammunition

D. Tank and Motor Transport Branch

1. Tanks
2. Other armored vehicles
3. Non-armored vehicles
4. Miscellaneous requisitions

E. Miscellaneous and expendable supplies

F. Construction and facilities

II. *Chemical Warfare Service*

A. Incendiary bombs

B. Other scheduled items

C. Miscellaneous requisitions

D. Construction and facilities

III. *Signal Corps*

A. Air Forces Materiel

B. Ground Forces Materiel (other than radar)

C. Ground radar

D. Miscellaneous requisitions

E. Construction and facilities

IV. *Medical Department*

A. Scheduled items

B. Miscellaneous requisitions

V. *Quartermaster Corps*

A. Scheduled items

B. Miscellaneous requisitions

VI. *Transportation Corps*

A. Marine equipment (not including maintenance and repair of ships in private yards)

B. Railway equipment (including m.r.o. for such equipment)

C. Miscellaneous requisitions

VII. *Engineer Corps—Supply*

- A. Supply equipment
- B. Landing mats
- C. Railway track material (other than re-lay rail)
- D. Theater of operation construction
- E. Miscellaneous requisitions

VIII. *Special Service Division*

The Construction Program was classified as follows:

Engineer Corps—Construction

- A. War Dept. sponsored projects not yet approved but subject to approval by WPB
- B. Construction within U. S.—Army financed and supervised
- C. Civil works—rivers and harbors—flood control
- D. Construction outside continental limits of the U. S.
- E. Defense Plant Corporation and privately financed projects (assigned by WPB)

In addition to its own requirements, the Army Service Forces presented to the War Production Board the requirements for controlled materials of the Office of Scientific Research and Development, the Panama Canal, and Lend-Lease spot purchases of military supplies.

Army requirements for Class B Group I Products by quarters from July 1, 1943 to June 30, 1944, were presented to the War Production Board on March 5, 1943. Estimates of total requirements for carbon steel, alloy steel, copper and aluminum for both Class A and Class B Products were also transmitted to the War Production Board on March 31, 1943.

The Production Division of Army Service Forces created a central unit, the CMP Control Branch, on January 2, 1943, to direct activities under the Controlled Materials Plan. The purpose of this unit was to develop procedures for the Army Service Forces as a whole that would enable each Technical Service to operate smoothly under the plan. It also trained personnel of the Technical Services in methods and procedures of operation. First efforts at training proved inadequate because of the general nature of the material presented. More satisfactory results were obtained through intensive courses in specific details and procedures for the operation of the Controlled Materials Plan.

Each Technical Service set up an officer to handle its C.M.P. problems. These officers met periodically with the Production Division of Headquarters, Army Service Forces to discuss problems and make plans for operation. The Director of the Production Division also sat on the Controlled Materials Plan Board of WPB, working out overall details for the operation of the materials control system. First directives to the Technical Services about how they would operate under C.M.P. were issued on November 29, 1942. Standard procedures for computing raw material requirements were consolidated and published in manual form on April 15, 1943.

Experience indicated that the major difficulty in computing raw material requirements under the Controlled Materials Plan lay in obtaining accurate bills of materials. Each contractor or manufacturing arsenal was required to submit to the War Department a bill of materials showing net weight of controlled materials in each item. Changes in design and specification that were made from time to time necessarily affected bills of materials. Some bills submitted were obviously incomplete. A common nomenclature was lacking. And frequently there was considerable confusion in distinguishing between Class A and Class B Products. The bills of materials submitted by War Department contractors were supposed to show Class B or component parts as completed parts. In other words, bills of materials were supposed to represent the net weight in various materials without the inclusion of component parts of the Class B Type.

In June, 1943, the War Production Board ruled that the War Department might obtain from its contractors bills of materials that included Class A and Class B products. The allotments of claims to raw materials to be used by manufacturers of Class B products remained in WPB hands.

A concerted effort was begun toward the end of the fiscal year 1943 to improve bills of materials for C.M.P. computations. Bills of materials for the same item from different manufacturers were compared. Net and gross weights were examined. Rough engineering estimates were prepared by procurement district offices and compared with the bills of materials submitted.

Another complicating factor in computing materials requirements was the determination of lead time. This was the period between the acquisition of a basic material or component parts and the completion of a military item for delivery to the War Department. Raw material requirements were calculated by multiplying the net weight of an individual item by production schedules. Production schedules, however, represented delivery dates. Consequently, some allowance had to be made for the period of time prior to delivery date when materials and components were required. A standard procedure for computing lead time was prepared and issued by the Production Division on April 2, 1943.

Unit weight data for major items of the Army Supply Program were placed on punched cards for machine tabulation of requirements data. Considerable strides were made by the end of the year in improving the accuracy of machine tabulations and summaries. The processes of preparing requirements data were greatly simplified by a reduction in classifications of shapes and sizes of materials asked for by the War Production Board.

As the basis for making allotments of materials to individual contractors under the Controlled Materials Plan, each Technical Service required a contractor to submit his own estimated total requirements of materials for a quarter on Form CMP-4a. These estimates served as an additional check upon the requirements estimates built up from bills of materials. The Technical Services were notified by Headquarters, Army Service Forces, of materials allotted to them for ensuing quarters. If allocations to the Army Service Forces by the War Production Board were less than requirements,

then allotments to the Technical Services had to be cut below their requests. Tentative earmarkings of materials to particular contractors might be made in advance by the Technical Services. This was subject to later revision. Each contractor ultimately received a form authorizing him to buy from producers controlled materials in the amounts listed thereon. When additional needs arose or errors occurred, the Technical Services presented further interim requests to the Production Division, Army Service Forces. Before these requests were in turn presented to the War Production Board, the Production Division made every possible effort to fill the need by switching materials from some less critical use. During the fiscal year 1943 it was found possible to make many of these shifts without resort to the War Production Board.

Of controlled materials allocated to the Army Service Forces for the second quarter of 1943, about 80 percent went to the Ordnance Department. The other Technical Services were relatively small consumers of metals, although on particular items their requirements were considerable. Thus Signal Corps was given 25 million pounds out of a total of 45 million pounds of copper wire mill products allocated to the Army Service Forces. The Signal Corps also received 4 million pounds out of a total of 5 million pounds of sheet and strip aluminum allocated to the Army Service Forces. In actual production during the second quarter, it was found that certain allocations, such as for aluminum forgings and pressings and for foundry copper products were in excess of production needs. These were reported to the War Production Board for transfer to other claimant agencies. In turn, certain shortages such as the need for two million pounds of aluminum for the spare parts program of Ordnance Department were reported to the War Production Board and a supplementary allocation received. Central accounting books on material allocations received from the War Production Board and material allotments to Technical Services were maintained in the Production Division of Army Service Forces.

Materials other than steel, copper, and aluminum continued to be purchased during the fiscal year 1943 under the priorities system and the Production Requirements Plan. Preference ratings were still assigned by procurement district offices to all contractors. These ratings were used in the purchase of component parts and in the purchase of materials not under the Controlled Materials Plan.

On June 26, 1942 the War Production Board issued priorities Regulation No. 12 providing for four new preference categories—AA-1 to AA-4. These ratings were applied principally to specific quantities of military items to be produced under the President's procurement directive of January, 1942. The quantities of goods for which special ratings were to be issued were submitted to the War Production Board. The ratings themselves were issued by local procurement offices. The four categories of preference ratings, taking precedence over A-1-a and all other preference ratings, covered virtually the entire military production goals of the calendar year 1942. The new ratings became effective July 15, 1942. An emergency rating of AAA was reserved for issuance under special conditions. This rat-

ing was issued only by the War Production Board itself upon application by the Army Service Forces. It was asked for only in order to break bottlenecks in the production of specific items. It was not used for whole procurement programs or even special procurement projects.

Early in the calendar year 1943 the new preference ratings AA-1 to AA-4 were continued in use and applied to the specific procurement objectives for the calendar year 1943 within the goals approved by the War Production Board.

On September 10, 1942, the War Production Board issued an order providing for the review of all preference ratings signed by Army contracting officers. A review analyst selected by the WPB was assigned to each major procurement office to authenticate certificates granting preference ratings on War Department prime contracts. The actual ratings were still assigned by the contracting officer. When the review analyst disagreed with the particular rating assigned a contract, the certificate could be issued immediately only with the rating decided to be appropriate by the review analyst. The local procurement office then directed an appeal to the War Production Board in Washington. Here the matter was taken up jointly by War Production Board and Army Service Forces representatives and the disagreement satisfactorily adjusted.

Program Control

The increased direct responsibilities of the Army Service Forces in materials control led to the need for more exact control of the procurement program. This control was necessary in order to determine that materials were being used effectively. All pertinent information about production objectives, delivery forecasts, materials requirements, stocks, orders, and deliveries for various parts of the procurement program were reviewed continually. Basic data were worked out to permit immediate comparisons of all phases of the program.

Particular attention was given to the problem of program balance. It was necessary to insure, in the first place, that there was balance between the programs of different Technical Services. Thus, for example, the production of radios for tanks had to be synchronized with the delivery of the tanks themselves. In the second place, it was necessary to maintain balance between phases of the procurement program of an individual Technical Service as between the production of guns and the production of ammunition. In the third place, it was necessary to maintain balance within a single phase of a program, such as between shell cases and fuzes. Finally, it was necessary to insure balance between production by prime contractor and deliveries from subcontractors. Thus completion of tanks depended upon the delivery of their motors.

Charts were developed to show the existence of improper balance within the Technical Service or between Technical Services, and the need for corrective measures. Assistance was rendered to the Technical Service by the Production Division in straightening out any difficulties that arose in production or in their records on requirements, schedules, and deliveries.

Methods were devised to adjust schedules in accordance with the allotments of materials by the Production Division to Technical Services. The Production Division also cooperated with the War Production Board on the entire problem of production scheduling.

Production Scheduling

Another major problem facing the Army Service Forces during the fiscal year 1943 as the procurement program got well under way, was production scheduling. In its simplest form as practiced by an individual manufacturer, production scheduling meant listing for each major item of output the component parts to be available by specific dates in order to turn out a specific quantity of the end product by a specific time. This production scheduling depended upon the availability of raw materials, the availability of machines required for the production or the assembly of the final product, and necessary labor. None of these factors was absolutely dependable. The availability of materials depended mainly upon deliveries under the priorities system and the Production Requirements Plan during the fiscal year 1943. These deliveries were never entirely certain. Various make-shifts in the use of machine tools and other equipment were necessary when the required tools could not be acquired as anticipated. Finally, labor uncertainties likewise complicated the preparation of production schedules.

Each procurement district office of the Army Service Forces in cooperation with the contractor was responsible for fixing delivery schedules under each contract. These delivery schedules in turn were supposed to reflect production schedules of the manufacturer and of his subcontractors. During the fiscal year 1943, it became necessary to check the forecast of deliveries with great care.

In the preparation of the Army Supply Program for a two year period, requirements based on military needs were stated in terms of annual procurement objectives. Each Technical Service in turn translated these annual procurement objectives into monthly procurement plans. These plans reflected available industrial capacity. Except in a few specific instances, they were not modified for the factor of available raw materials, since this was not known for any extended period in advance. Forecasts of deliveries which were made over a shorter period of time than procurement plans were based upon production schedules and anticipated deliveries of materials.

Production forecasts were received from prime contractors on or about the tenth of the month preceding that for which forecasts were made. These forecasts were checked by district procurement offices and by the headquarters of the Technical Services. In a number of fields, industry integration committees were created to advise a Technical Service in preparing and reviewing these production forecasts. By the time the forecasts were incorporated in the section of the Monthly Progress Report on procurement, they were from 15 to 20 days old.

These forecasts were frequently upset by material shortages, since many manufacturers had inadequate inventories to maintain sustained production. At times it was necessary to interrupt production of one item by shifting

materials to another. Thus in July and September, 1942, the production of 60mm. mortars was considerably below the original forecast because seamless steel tubing was diverted from this production to meet needs of the Army Air Forces. The production of 90mm. guns failed to realize the forecast for a particular month because of the diversion to foreign export of breach block stock. These diversions were necessary because of sudden demands which could not otherwise be met. Necessarily, however, such action made production scheduling difficult and forecasts inaccurate.

By increased emphasis upon conservative practices in estimating forecasts and as the flow of materials became more certain, the record of the procurement program in realizing production forecasts improved steadily throughout the year.

During the course of the fiscal year 1943 the respective responsibilities of the War Production Board and the War Department in production scheduling were re-affirmed. The Army Service Forces was responsible for setting production schedules for its prime contractors for completed military items. The War Production Board was mainly responsible for scheduling the output of processors of raw materials and the production of general industrial components and supplies.

Rubber

Immediately after the attack on Pearl Harbor, the War Department took steps to reduce its demands for crude rubber and better to maintain existing rubber products. A rubber conservation section was first set up in the Motor Transport Division of the Office of the Quartermaster General. A short time later a rubber conservation section was created in the Army and Navy Munitions Board. This second section was transferred to the Production Division in Headquarters, Army Service Forces in October, 1942, a month after the report of the Baruch rubber committee. The section, which on January 2, 1943, became a branch, was given broad supervisory control over every phase of the rubber problem within the Army Service Forces. Also, it was the official liaison agency with the Office of Rubber Director, War Production Board, as well as with all other departments and agencies concerned with rubber.

First emphasis in the A. S. F. rubber program was given to the elimination of rubber from various products, the substitution of reclaimed rubber or rubber-like materials for crude rubber, and the reduction of crude rubber content in military products. A substantial list of prohibited uses of rubber was developed. This conservation program reduced over-all military requirements for crude rubber by 50 percent.

The conservation of crude rubber in tires, tubes, and flaps was typical of the accomplishments realized during the year. These products accounted for approximately 60 percent of Army Service Forces requirements for crude rubber. Through several successive stages, reclaimed rubber was introduced into tire compounds, replacing approximately equivalent quantities of crude, and tread depth and tread radii were also reduced. While these changes

tended to reduce the mileage life of such tires, combat conditions in overseas theaters made it unnecessary to have high mileage tires.

Crude rubber was eliminated or the crude content reduced in such items as service shoes, rubber footwear, hip boots, raincoats, construction wire and cable, hose of all types, crash pads, seat cushions, gas masks, automotive parts, etc. A number of studies were undertaken on preventive maintenance in the field. Technical and training manuals and conservation circulars were issued to the using Arms and Services.

With the increased production of the several synthetic rubbers in the last half of the fiscal year, and looking forward to their volume production in 1944, a comprehensive conversion program was developed to convert the principal Army uses of rubber from crude to synthetic rubber. Material progress was made in the development of specifications on synthetic tires. The Army Service Forces was prepared to use synthetic rubber in tires as rapidly as the synthetic became available. A possible shortage of high tenacity rayon threatened the success of this program, but an expansion in production of this type of rayon was negotiated.

During the fiscal year, three separate and complete studies were made of rubber requirements of the Army Service Forces for 1943 and 1944. These studies were used to guide the conservation and conversion programs. Summaries were also transmitted to the Office of Rubber Director as a basis for quarterly allocations.

A tire inventory procedure was established for the continental United States, and after its successful development, the program was turned over to the Ordnance Department for operation. The procurement of all replacement tires, tubes, and flaps and their component parts was centralized in the Chief of Ordnance, effective July 1, 1943. All the benefits of centralized control were expected to develop from this action.

CONSERVATION

During the fiscal year 1943 increased attention was given to the more efficient use of available raw materials, labor, and manufacturing facilities. In this as in other production problems, the Army Service Forces worked closely with the War Production Board. The general procedure was to review the availability of alternative materials in the production of any given military item. Secondary attention was devoted to eliminating critical materials from certain uses. Conservation was achieved through changes in specifications, through standardization of types of products, and through simplification of various items of equipment and supply.

The substitution of sisal or cotton for manila fiber in tent ropes and other ropes purchased by the Army resulted in saving some 17 million pounds of manila fiber in the first half of the fiscal year alone. These savings were extended in the second six months. The reduced copper content in Army insignia, field ranges, and tents produced an estimated savings of 50 million pounds of copper through the end of the calendar year 1943. The elimination of copper in hardware on army construction projects saved 37 million pounds of copper in the last six months of the calendar year 1942.

Total savings of copper in construction work were estimated at over one hundred million pounds. The substitution of steel for copper in the manufacture of artillery cartridge cases was expected to achieve a savings of six hundred million pounds of copper by the end of the calendar year 1943.

The elimination of aluminum in radio sets will save 1,400,000 pounds of aluminum in 1943. The elimination or reduction of aluminum content in Quartermaster supplies will save 85 million pounds of aluminum by the end of 1943. Over 17 million pounds of aluminum will be saved by the substitution of steel or secondary aluminum die castings for primary aluminum in the production of two types of fuzes. On another fuze the substitution of plastics for primary aluminum bar will mean a saving of 35 million pounds through 1943. The substitution of steel for aluminum in searchlights will save 9 million pounds.

The substitution of enamelware for nickel in medical utensils saved 113,000 pounds of nickel in the first six months of the fiscal year 1943. Reductions in the nickel content in armor plate and in armor piercing shot will save 45 million pounds of nickel by December, 1943. The reduction of the nickel content in Quartermaster items will save 2½ million pounds of nickel in the same period.

The substitution of cotton for silk in cartridge bag cloth will save 900,000 pounds of silk through the end of the calendar year 1943. The use of fiber containers for tin in the packaging of small arms ammunition will conserve over ten million pounds of tin in the same period. Over four million pounds of tin will be saved by a decrease in the tin used in coating food cans. The substitution of steel for brass cartridge cases will also save 260 million pounds of zinc.

In many Ordnance plants glass gages replaced steel gages and proved more satisfactory in many ways. Glass gages were found to wear longer, were corrosion free, did not expand so readily from transmitted body heat, resisted abrasion better, and were not so subject to deformation from rough handling. The Medical Department developed a container of laminated paper and lead foil to replace steel. And the Signal Corps substituted malleable iron for brass in microphones.

Many U. S. Army specifications were reviewed during the fiscal year. In the course of this review it was possible to bring about much standardization or simplification. For example, 44 different specifications for chests and tool boxes were reduced to one. One standard Army specification was developed for axes. Color standards were reduced from 170 to 72 and 12 specifications were changed to substitute brass scrap for high-grade brass.

The Army Service Forces, cooperating with the War Production Board, reduced the number of small gasoline engines used by the Army from 87 to 47. The number of models for alternating current, engine driven generators was reduced from 63 to 14, enabling a substantial increase in production. The purchase of non-standard power transformers was completely eliminated. The number of trailer chassis models purchased by the Army was reduced from 21 to 15. The purchase of bronze table lamps and floor lamps for use in Army camps was eliminated.

Another effort undertaken during the fiscal year was to bring about standardization within the Army Service Forces in the nomenclature and number series used to designate various items of supply. The Federal Standard Stock Catalog was adopted as the uniform system for the classification, identification, and cataloguing of all items of procurement stored and issued by the Army Service Forces. A central section was set up in the Production Division of Headquarters to direct the classifying activities of the Technical Services for purely military items. Arrangements were made for the Procurement Division of the Treasury Department to classify all commercial items, assisted by a grant from the War Department.

During the fiscal year 1942 the War Department and the Navy Department agreed upon a list of prohibited items not to be used in construction work. The official Army and Navy Munitions Board List of Prohibited Items for Construction appeared on April 1, 1942. This list was more exclusive than the conservation orders issued up to that time by the War Production Board. During the fiscal year 1943 observance of this prohibited list of items was strictly enforced by the Army Service Forces. Several proposals were made that the list should permit purchase and use of items not prohibited by WPB Order L-59. This was not done. Subsequent amendments to the War Production Board Order made the list of prohibitions more nearly the same as those contained in the Army and Navy Munitions Board List. The list of prohibited articles was revised in full on January 1, and again on May 19, 1943.

Packing and Packaging

On July 26, 1942 the Army Service Forces created a Packing and Packaging Section in the Production Division to direct increased attention to the importance of savings in materials, shipping space, and wear through proper packaging. During the year standard specifications on packing were developed as well as uniform methods for preventing corrosion in articles shipped. The results were a 50 percent reduction in damage to overseas shipments.

Gas-proofed, waterproof packages were developed by the Quartermaster Corps which could be floated ashore during landing operations. Packages to resist all extremes of weather were also designed.

In the last half of the fiscal year 1943 the redesign of shipping boxes was estimated to have saved 75,000 tons of shipping space, or roughly the capacity of eight Liberty ships. The Ordnance Department effected an 18 percent saving by the redesign of large sheath crates used in shipping knocked-down motor vehicles. An 8 percent saving was realized in improved ammunition containers. A 16 percent saving was realized through the use of a new "V" type fiber box for the shipment of subsistence items. The removal of one wheel of motorcycles and the rearrangement of other parts in a crate reduced by one-third the required shipping space. A .50 caliber heavy-barrelled Browning machine gun was shipped in one-third the space formerly required. Medium sized tractors were repacked to save 190 cubic feet of cargo space for each one. Altogether, estimated savings

in shipping space by June 30, 1943, amounted to 10 percent of total Army supplies shipped overseas.

Redistribution and Salvage

During the fiscal year 1943 Service Commanders were made responsible for salvaging or reclaiming all available Army property within the United States. The number of repair shops and repair depots operated by the Army Service Forces was greatly enlarged. Quartermaster repair shops increased to 250, and new wood and metal repair shops were set up at the larger ones. Shoe rebuilding shops were able to turn out 13,000 pairs a day, and were expected to reach 20,000 pairs a day in the near future. The sale of kitchen waste was standardized at posts, camps, and stations. Arrangements were also made for ports of embarkation to receive and dispose of salvaged items returned from overseas.

On May 21, 1943, staff supervision over salvage and excess and surplus property activities was placed in the Production Division of Headquarters, Army Service Forces. Procurement Regulations No. 7 was revised and re-issued so as to confer authority for the prompt and orderly return to use of all equipment, inventories, and partly completed products in the hands of War Department contractors and manufacturing arsenals which were not required for immediate or definitely foreseeable use.

Tentative lists of surplus materials were obtained from depots, camps, and stations and were made available to the War Production Board and other Government agencies. Provision was made to obtain and circulate lists in such form and content as would facilitate the locating and disposing of all available industrial material and equipment.

The Army Service Forces worked with the Procurement Division, Treasury Department, the War Production Board, and other Government agencies engaged in redistribution. When considerable quantities of lend-lease steel accumulated at seaboard shipping points without available shipping capacity for its overseas haul, the Army Service Forces cooperated with the War Production Board in effecting its redistribution. The Army Service Forces also participated in a number of other special redistribution projects sponsored by the War Production Board, including the program for the redistribution of new steel valves and in the idle steel drive.

On July 17, 1942, the War Department directed that obsolete guns, mortars, vehicles, and other materiel retained on Army posts be turned in for salvage.

Salvage material was also returned from overseas theaters. This consisted both of scrap and of repairable property which could not be returned to useable condition in the theater itself. The quantity returned to the United States was negligible until several months after the opening of the North African campaign. Beginning in April, 1943, the quantity increased steadily to the end of the year. The Army also returned Navy salvage from North Africa.

Many thousand tons of scrap and countless numbers of repairable items ranging in size from radio tubes to whole airplane motors were returned.

Among these items were thousands of 55-gallon steel drums, thousands of tons of fired cartridge cases, hundreds of tons of tank and half-track tracks, many thousands repairable tires and tubes, gasoline and oxygen cylinders, and other items. Captured enemy equipment was consigned to Aberdeen for technical research and experimentation.

Before the end of the year salvage centers were installed in eastern and coastal Service Commands and plans were made to install such centers in western and southern coastal Service Commands. These segregation centers provided a place for the expeditious discharge of salvage from ships and for the proper separation of the repairable property to be sent to the various Technical Services. They also examined materiel for any ammunition, booby traps, or sealed containers of an explosive nature that might be contained in it.

LABOR RELATIONS AND LABOR SUPPLY

The twelve-month period ending June 30, 1943, witnessed the increasing development of labor shortages in specific occupations, in particular communities and areas, and in certain industries. The most direct action which the War Department could take to avoid the threat of labor shortage in particular areas was to distribute its contracts, where other factors made this possible, with reference to the available supply of workers. Even before the beginning of the fiscal year 1943 the policy of avoiding congested labor markets in the allocation of new contracts was being followed, and procurement officers, with the cooperation of the War Manpower Commission, were supplied with the information necessary to effectuate such action. In November, 1942, this policy was made explicit and written formally into Army procurement regulations. By spring of 1943 the effectiveness of the policy was sufficiently evident to result in favorable public comment from both the War Manpower Commission and the War Production Board.

The direct responsibility of the Army Service Forces for the solution of particular labor problems varied considerably with the type of relationship that existed among the Army, management, and workers. Where the War Department itself was the management, the obligation for sound labor utilization practices and good labor relations was evident. The responsibility was also clear in the case of government-owned facilities that had been turned over to private management for operation. While less obvious, the cost-plus-a-fixed-fee contract involved considerable Army supervision, since wages and working conditions enter largely into the computation of reimbursement costs. Other contractors were required to agree to certain clauses common to most government contracts, and as the contracting agency the Army was responsible for adherence to these articles.

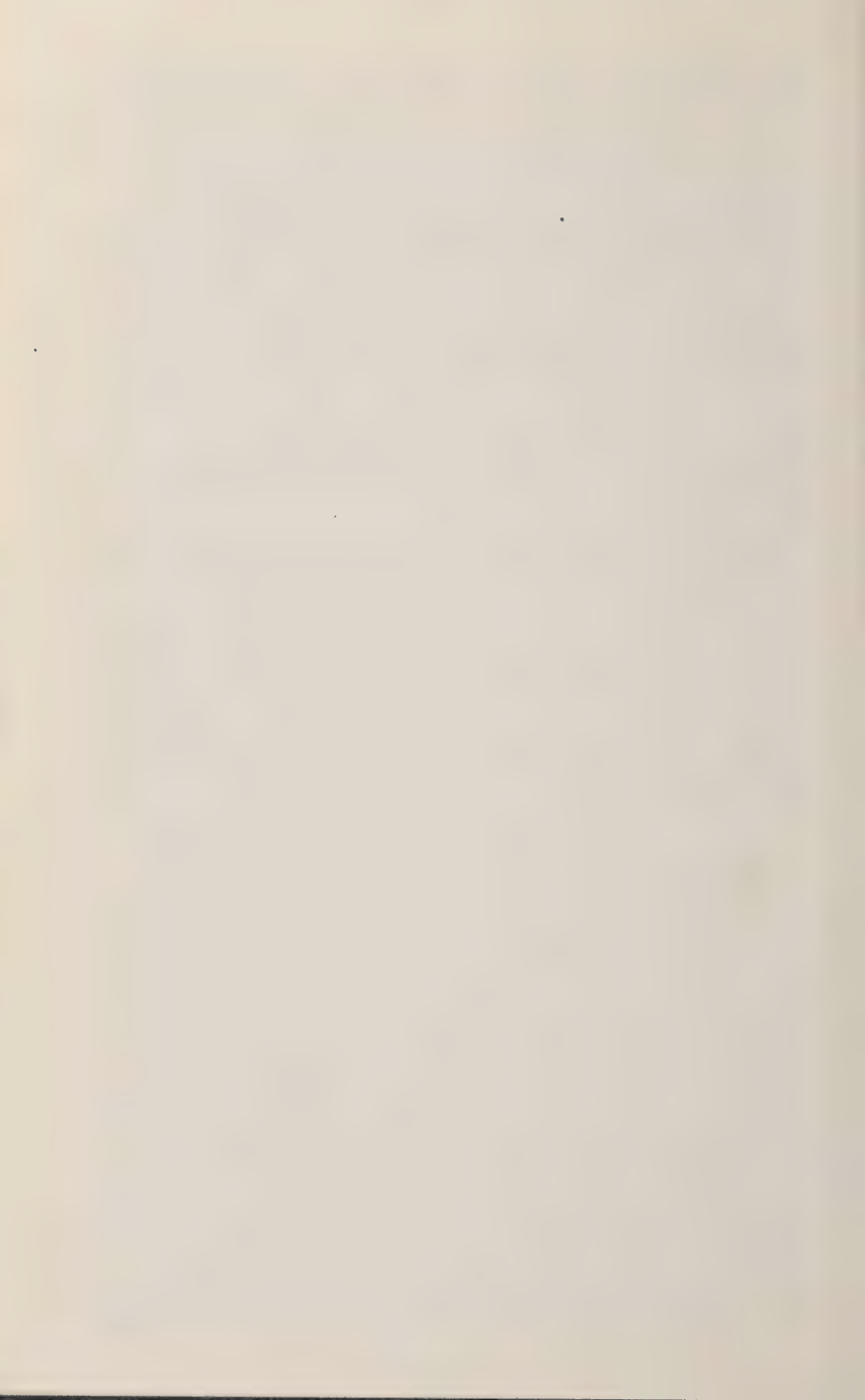
Just prior to the beginning of the fiscal year 1943, the War Department adopted a comprehensive labor policy for government-owned, privately-operated plants. No employee or person seeking employment was to be discriminated against by reason of race, color, creed, or sex. To avoid inter-union conflict, the recognition of an exclusive bargaining agent for employees was to be deferred until a majority of the estimated total of that

unit had been hired, although arrangements were made to handle grievances prior to that time. Seniority was to constitute a determining factor in matters affecting layoff, reemployment and promotions only where other factors of aptitude and ability were equal. A definite procedure was established for the removal of subversive individuals from employment.

This policy was instrumental not only in furthering more harmonious relations within the types of establishment to which it pertained, but it also served as a model for privately owned plants whose production was essential to the war effort.

The adequacy of community facilities such as housing, sanitation and transportation were watched with as much care as labor relations or ineffective labor utilization. Not only was management made to appreciate its contractual obligations to keep production moving, but worker organizations were enlisted in the effort to carry an understanding of the need for war production to their members. The success of activities of this nature could not be measured quantitatively since its results were to a large extent preventive.

The Army Service Forces was called upon by the General Staff, the Secretary and Under Secretary of War and other government agencies to supply information, advice, and policy on a wide variety of subjects related to the manpower problem. During the year the Army Service Forces assisted in the development of policies on agricultural labor and on the use of prisoners of war. Assistance was rendered to the Civil Affairs Division of the War Department General Staff in connection with manpower problems in the foreign areas occupied by the Army. All of these problems were centrally handled or directed within the Army Service Forces by the Industrial Personnel Division.



VI

INTERNATIONAL AID

The fiscal year 1943 saw the realization of large-scale materiel assistance to our Allies and other nations resisting Axis aggression. In the course of the year transfers of ground equipment purchased by the Army Service Forces amounted to over 3.2 billion dollars.

The policy governing the supply of United States assistance to other nations was set forth in the Lend-Lease Act of March 11, 1941. To the War Department, and to the Army Service Forces in particular, was given the principal responsibility for procuring and assigning military equipment of ground types for the other United Nations. The internal administrative machinery for this task was reorganized during the fiscal year 1942. During the fiscal year 1943 the machinery was perfected and operations made more systematic.

The first task in handling the military supply needs of our Allies and of other nations was to fit their demands into the procurement program of the Army Service Forces. Requirements for ground type equipment were presented by foreign nations to the International Aid Division in Headquarters, Army Services Forces. Officially such requests were considered by an International Supply Committee. The chairman of this committee was the director of the International Aid Division, Army Service Forces, and membership of the Committee consisted of representatives from the Office of the Director of Operations, A. S. F.; a representative of the office of the Director of the Requirements Division, A. S. F.; and a representative of the country submitting the supply program. Committee meetings were usually attended also by representatives of the War Department General Staff, of the Lend-Lease Administration, and of the various Technical Services of the Army Service Forces.

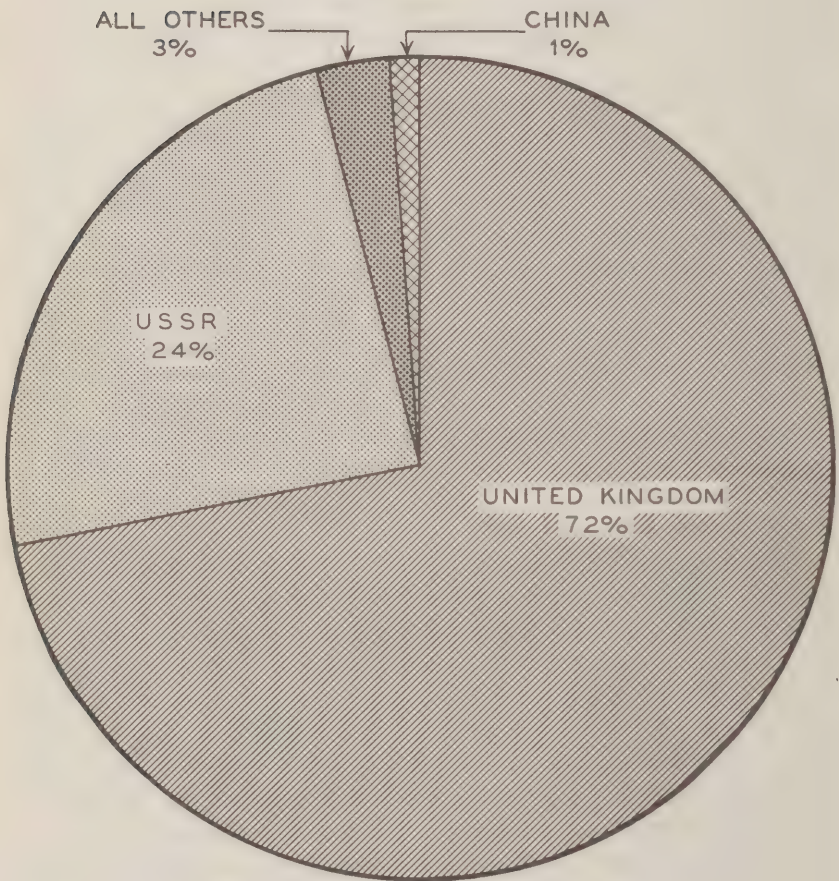
To the International Supply Committee were brought requests for war materiel of the types procured by the Army Service Forces for the use of American troops and also requests for types of materiel different from that obtained for our own army. In the latter case, procurement depended upon the availability of facilities, the availability of raw materials, and the assurance of non-interference with production of supplies for American troops. When non-common items were approved, the International Aid Division issued the necessary directives for purchase of the supplies and for their immediate transfer to the requesting nation upon manufacture.

The increased scarcity of raw materials during the fiscal year 1943 made it necessary to screen all International Aid requirements with the greatest care. Careful consideration of the relation of the international aid program to the American arms program was begun in March, 1943. In the fall of 1942 it was necessary to adjust international aid demands as well as American needs within total overall limits set by the War Production Board. Accord-

CHART 26

DESTINATION LEND-LEASE GROUND ITEMS

FISCAL YEAR 1943



ingly, certain total limits were set for the procurement of international aid supplies during the calendar year 1943.

Thereafter the International Supply Committee came to an end. Necessary adjustments in the program to procure supplies for Lend-Lease were handled by the International Aid Division. Approved needs for specific types of equipment and supplies were transmitted to the Requirements Division for inclusion in the Army Supply Program. In other words, Lend-Lease needs were added to the procurement program for American forces to make up together the total requirements set forth in the Army Supply Program.

The second task in international aid procedure was the transfer of completed items of equipment to foreign nations. The inclusion of international aid requirements in the Army Supply Program was a guarantee that Allied needs should be added to our own. As already noted, however, the procurement program was a two-year plan for the procurement of war materiel. These supplies were obtained in varying quantity from month to month. Immediately after December 7, 1941, the policy was adopted of considering all munitions obtained from American industry as a common pool for use as the military needs of the United Nations might dictate. Russian Lend-Lease was set by international agreement. Otherwise, whether supplies were purchased as a part of the American equipment program or as a part of the international aid program, completed items of equipment were considered in accordance with strategic needs at the time of delivery.

The assignment of munitions was the responsibility of the Combined Chiefs of Staff and the Munitions Assignments Board set up during the fiscal year 1942. The Munitions Assignments Committee (Ground), one of the three major committees of the Munitions Assignments Board, was headed by the director of the International Aid Division. The secretariat of the Ground Committee was also supplied by the International Aid Division.

The effect of an assignment was to establish authority for a transfer of a specific item or items by a Technical Service to a designated country. The Technical Service sent the proper representative of a foreign government a notice of availability when an assigned item was inspected, accepted, and loaded at a manufacturer's plant, at a depot, or at some other site ready for shipment. It was the responsibility of the Technical Service to deliver the assigned materials to a port for overseas shipment. Shipping instructions were received from the foreign government to which the materiel had been assigned. Such materiel, however, could not enter a port area within the United States without a release from the Transportation Corps, executing decisions of the International Shipping Adjustment Board.

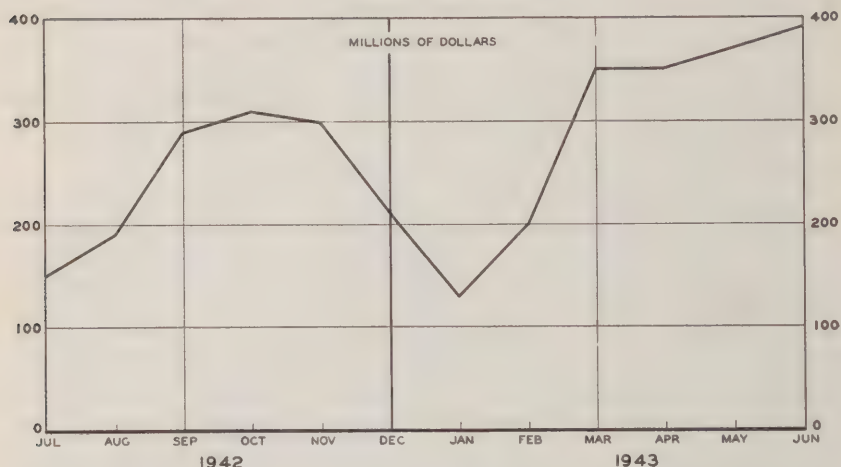
Necessarily, the assignment of munitions had to be closely correlated with the availability of shipping space for the transport of Lend-Lease supplies. Assigned supplies not floated within 45 days of the notice of availability to a foreign government were made available for reassignment to another nation or to the Army of the United States. Bimonthly reports were received from the Technical Services showing items still upshipped after the lapse of 45 days.

An important procedural improvement during the fiscal year 1943 was the institution of the block system of assignment. Under this system the follow-

ing month's production of a given military item was divided into blocks, each representing approximately one-fourth of the total month's production. In turn, blocks were divided into sub-blocks. Each block of production was assigned to various countries. Priority of delivery was established by assignment of sub-blocks. For example, if Block 1 of next month's production of tanks was divided among the United States, Russia, the United Kingdom, and China, four sub-blocks were divided into "a", "b", "c", and "d" priorities. The "a" sub-block was then delivered to the United States, "b" sub-block to Russia, "c" sub-block to the United Kingdom, and "d" sub-block to China. The remaining three blocks of a month's production might similarly be assigned. A small quantity of the month's production might be con-

CHART 27

**LEND-LEASE TRANSFERS OF GROUND ITEMS PROCURED
BY ARMY SERVICE FORCES
FISCAL YEAR 1943**



sidered as a wedge between the first and second block and be assigned to China or some other nation.

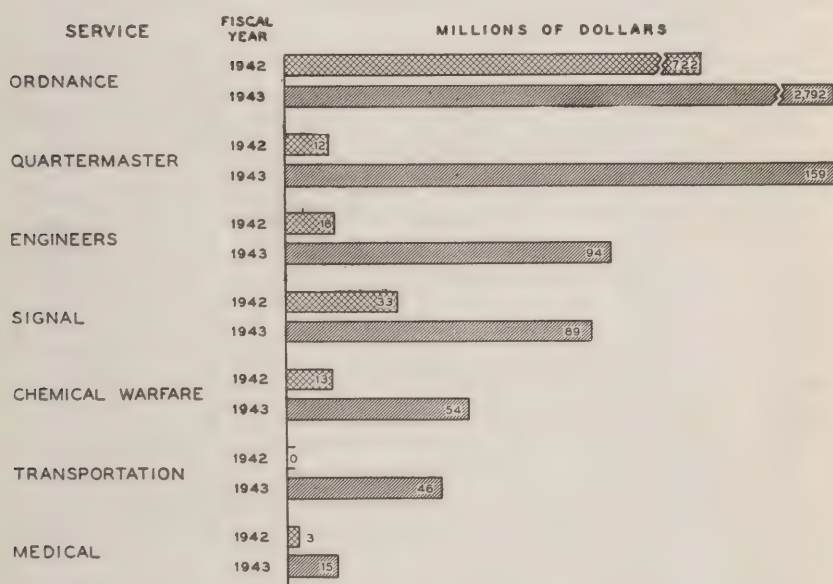
Another procedure instituted during the fiscal year was to assign certain war supplies to theater commanders for delivery to other nations. The lengthy time required for passage of supplies to certain theaters made this practice desirable. In the period of time between the assignment of munitions and their actual arrival at an overseas destination, strategic considerations and needs might change greatly. Thus many assignments of munitions to Australia were made to the American Commander in the Southwest Pacific theater of operations for delivery by him to the Australian government. The United States assumed complete responsibility for the overseas transportation of such shipments.

The reporting of all Lend-Lease transactions throughout the Army Service Forces was placed upon an orderly, systematic basis during the fiscal year. The Monthly Progress Report on procurement was used as the basis for

information about the total number of major items in the Army Supply Program to be delivered in an ensuing month. After an item had been assigned for transfer a single report form was used to indicate each month the status of action on the assigned item. Another report form was used to indicate action on requisitioned items, that is, items not a part of the Army Supply Program. Finally, the Technical Services reported each month transferred war material that had not been floated within 45 days of the notification of availability. These three basic reports culminated the effort

CHART 28

**LEND-LEASE TRANSFERS OF GROUND ITEMS PROCURED
BY THE TECHNICAL SERVICES**



made during the year to eliminate many special requests for individual information from the Technical Services.

The transfer of military ground supplies by the Army Service Forces during the fiscal year 1943 is shown in the accompanying chart. About 85 percent of the total supplies transferred were procured by the Ordnance Department. Five percent were obtained by the Quartermaster Corps, 3 percent by the Corps of Engineers, and 2 percent by the Signal Corps.

Approximately \$38,000,000 worth of clothing and equipage was transferred under Lend-Lease during the year. The items included 1,500,000 wool blankets and nearly 3,000,000 wool socks. The shipment of Signal Corps supplies during the year averaged 6,000 tons per month compared with 2,600 tons per month in the fiscal year 1942. From January to June, 1943, more than 230,000 miles of wire were transferred to the other United

Nations. Total Signal Corps supplies provided under Lend-Lease up to June 30, 1943, included 100,000 telephone poles, 51,000 radio sets, 8,000 radio transmitters, 1,000 telegraph sets, and 56,000 sound powered telephones. In the month of June, 1943, nearly 50,000 tons of Engineer supplies were shipped overseas for use by other nations.

The use of American materiel by other troops long before our own soldiers went into combat was a real-life testing of its characteristics. From reports of the users and of American observers, information was gained which led to many improvements in the performance of our own equipment.

Reverse Lend-Lease

The principle underlying reciprocal aid or Reverse Lend-Lease was that the war production and other war resources of the United Nations should be used by the armed forces of all in those ways which would most effectively utilize the available materials, manpower, production facilities, and shipping space of each nation.

Reciprocal aid had its inception in the occupation by American troops of bases in Iceland and the Caribbean in the course of which they took over installations previously used by the British, and in the transfer to the United States by the United Kingdom shortly after our entry into the war of equipment and technical information vital to the defense of the Panama Canal and the Western Hemisphere. Reciprocal aid in the form of supplies, equipment, services, facilities, and information was supplied to our Government and its armed forces by the United Kingdom, Australia, and New Zealand on an informal basis for several months prior to the execution of formal Reciprocal Aid Agreements on September 3, 1942. On that date, agreements were entered into with the United Kingdom (including the British Colonial Empire), Australia, New Zealand, and the Fighting French. Agreements of similar nature were subsequently made with Belgium and the Netherlands.

From time to time, additional formal agreements for the provision of reciprocal aid will be negotiated. In the meantime, the United States received reciprocal aid not only from the governments mentioned but also from India, China, and the Union of South Africa.

Reciprocal aid developed along two main lines. First, and most important in volume, was the aid received by our forces in the several theaters of operations. This type of aid was the most important from the point of view of quantity, strategic importance, and the conservation of shipping. The second principal type of reciprocal aid took the form of requests for equipment, patent rights, or technical information needed from the other United Nations for use in the United States. In this manner the United States received materials and equipment lacking in this country, or desired for experimental and training purposes, or for use in establishing production facilities in the United States. More recently, reciprocal aid has been obtained from one theater of operations for shipment to another theater for use by our forces.

Reverse Lend-Lease played an especially active part in clothing and feeding American forces in various theaters. For example, in the Middle East, the British agreed to provide for the maintenance of the existing forces in that

area, plus any normal additions. This agreement did not apply to initial issue, but it did mean that clothing and items of personal equipment needed to maintain American forces there would be provided by the British. A "common-user list" of supplies was developed by the British and American military authorities. An agreement, known as Programme C, applied to American forces stationed in the British Isles. When American troops moved into or took over an installation, accommodation stores were furnished by the British in accordance with an agreed upon scale. These issues were made automatically when the troops arrived. In the Southwest Pacific virtually all food requirements for American soldiers were provided by the Australian government. Clothing and textiles were also delivered.

The Signal Corps received many secret scientific instruments and information as well as other apparatus from other nations for use at its laboratories in research and development work. On one occasion an urgent need for dynamotors by the American Air Forces was met by cabling to England. In less than 72 hours, 100 dynamotors were shipped to the United States by air.

In the spring of 1942, a broad, general directive for the recording and reporting of reciprocal aid was developed by the War Department and issued to theater commanders. This directive, dated 22 June 1942, required bi-monthly reports reflecting the amount and estimated value of reciprocal aid received. Later in 1942, because the British Government was reluctant to estimate the value of reciprocal aid given our forces, and because of difficulties experienced by American Commanders in estimating the value of reciprocal aid received, a second directive, dated 22 October 1942, was issued under which the War Department, with the approval of the Office of Lend-Lease Administration, relieved theater commanders of the responsibility for estimating the value of reciprocal aid received by them. As the volume of reciprocal aid increased, however, and interest in the matter grew, the need for some monetary measurement of reciprocal aid became apparent. Because of the dissimilarity of foreign and United States items, differences in raw materials and labor costs, and inadequate descriptions in certain instances, reports obtained from overseas on specific assistance received were found to be inadequate for any attempted estimate of its value by the War Department in Washington. Accordingly, after conferring with all interested agencies, the War Department sent another directive, dated 24 June 1943, to oversea commanders requiring them beginning 1 July 1943, to estimate the value of reciprocal aid received. Simultaneously, negotiations were entered into by the State Department with the British Government to persuade the latter to furnish our forces overseas with the value of the reciprocal aid provided them.

In order to insure the maximum development and utilization of local theater resources and production by our forces in the several theaters, procurement organizations were established in the principal theaters of operations. These organizations were charged with the control and coordination of all procurement for our forces in the theaters and were responsible for the exploitation and development of local resources in order to reduce required shipments from the continental United States. With the develop-

ment of reciprocal aid, procurement by our forces in oversea theaters increasingly was on a reciprocal aid basis without cash payment. A study was made of these procurement organizations and the War Department issued on June 26, 1943 a general guide designed to aid theater commanders in establishing organizations, procedures, and policies for the most efficient utilization and development of local theater resources and production.

At the end of the year surveys were under way in a number of areas to determine the amounts of foodstuffs, storage space, certain raw materials, and other items that might be obtained by American forces locally.

The Provision of Civilian Supplies

When it was decided in April, 1943, that in future operations the military authorities would be responsible for civilian supply in any given area during the period of military government, the need arose for an organization to coordinate and guide the necessary activities of the Army Service Forces in meeting these requirements. The International Aid Division was assigned the responsibility "to determine and present requirements for civilian supplies for use by the military in liberated and occupied areas." One phase of this responsibility was to maintain liaison with the War Department General Staff and with appropriate civilian agencies on problems of civilian supply in liberated and occupied areas. A civilian supply branch was set up in May, 1943, to perform the necessary work in Headquarters, Army Service Forces.

The occupation of North Africa by American and British troops did not present an instance of military government in the orthodox sense, since there was present from almost the outset a friendly resident government retaining local governmental control in its hands with only occasional supervision by the Allied military authorities. Accordingly, the responsibility for dealing with civilian supply questions was delegated by the Joint Chiefs of Staff to the State Department. The latter, in turn, organized in Washington the Combined Committee for French North and West African Affairs (CCNA), composed of representatives of all the interested departments and agencies of the government and of the combined committees. As a counterpart, the North African Economic Board (NAEB) was constituted in the headquarters of the theater commander, this board being composed of military and civilian personnel, both American and British. The International Aid Division in Headquarters, Army Service Forces represented the War Department on the Washington committee until March, 1943. After that date the representation was continued through the Civil Affairs Division, Office of the Chief of Staff. The purpose of this representation was to indicate War Department interest in the supply programs which came before the Committee and to keep the Army Service Forces informed of the work of the Committee. A large volume of cables, passing between CCNA and NAEB, were reviewed by the International Aid Division. The policies and procedures of these two organizations were of continued interest to the various staff divisions of Army Service Forces, since in many instances the programs of the civilian agencies were of directive interest to all concerned with the Army Supply Program.

VII

THE PLANNING OF MILITARY OPERATIONS

As American troops proceeded overseas in increasing numbers and engaged the enemy on many different fronts, it became necessary to calculate with considerable care the special supply requirements of a particular area. The size of any operation depended in large part upon the facilities available for its supply support. The number of troops that could be kept in any given locality depended not only upon the port loading capacity and available shipping and naval escort potential of the United States, but also upon the port unloading and clearance capacity overseas. In turn, the special supplies to be shipped overseas depended upon the needs of a particular area. If an area already possessed improved roads, fairly modern railroads, and large towns with various storage facilities, the needs in construction materials, railroad rolling stock, and building materials might be fairly meager. On the other hand, if there were virtually no port unloading or storage facilities or inadequate means of transportation, then no military operation could proceed without adequate provision for meeting these deficiencies.

The availability of critical items of equipment for the use of troops to be used in an operation also had to be determined. If sufficient quantities were not available, steps were taken to obtain the required equipment directly from factories without going through depots. Sometimes shifts of equipment from troops in training to troops going overseas was necessary. Another important action was to determine that the service troops needed for a specific operation would be available.

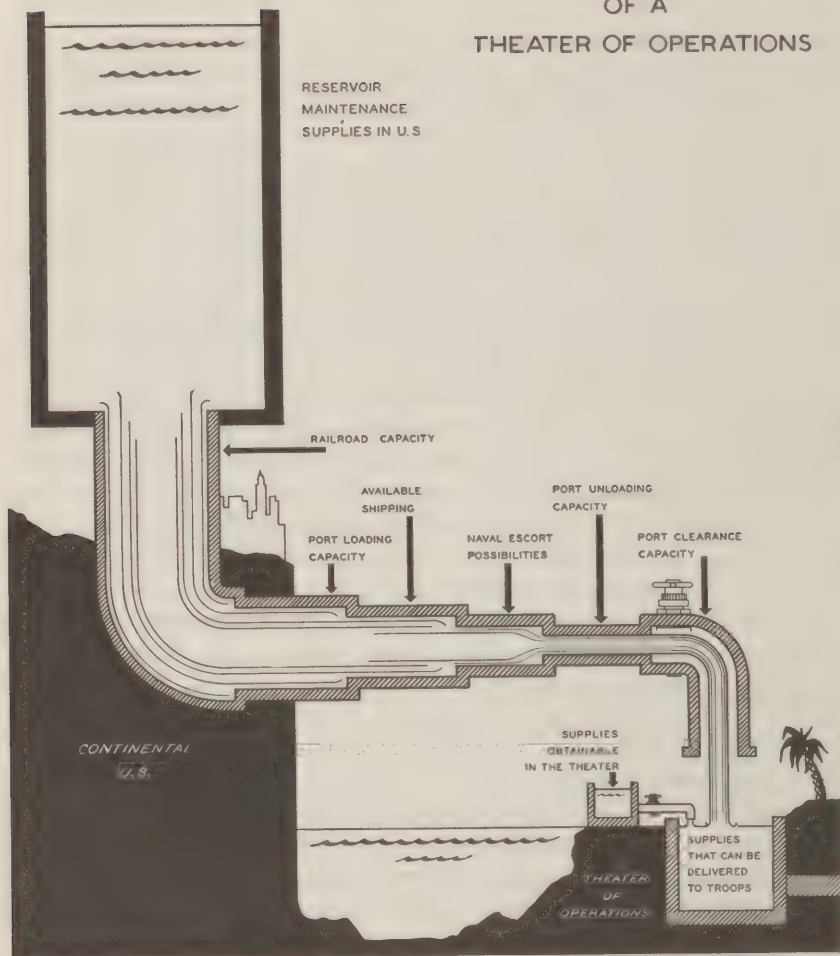
It was the job of the Army Service Forces to prepare the necessary studies for all areas where military operations might be contemplated and to direct the procurement of the necessary requirements. Current data on availability of supplies and equipment were kept to assist in this work. The factors determining the supply capabilities of a proposed area of military operations are graphically illustrated in the accompanying chart.

For the Allied landing in North Africa on November 8, 1942, the Army Service Forces had previously prepared voluminous reports on all port facilities of the area, the condition of roads, the number and capacity of railroad rolling stock, available water supply and other public utility services, the principal products of the region, and possible supplies obtainable locally in support of the Allied operations, and many other details about the physical and economic resources of the entire North African area.

The Signal Corps, for example, had prepared a complete wire plan for North Africa. This plan included large switchboard installations at various points with carrier telephone, voice frequency carrier telegraph and repeater stations, and a special inter-communication and automatic relay frequency modulated radio system for Allied Force Headquarters. This system provided instant communication between the Commanding General and his staff and subordinate commanders at any point in the theater of operations.

CHART 29

FACTORS DETERMINING SUPPLY CAPABILITIES OF A THEATER OF OPERATIONS



The Signal troops to operate the equipment provided the task forces landed with the first wave of troops.

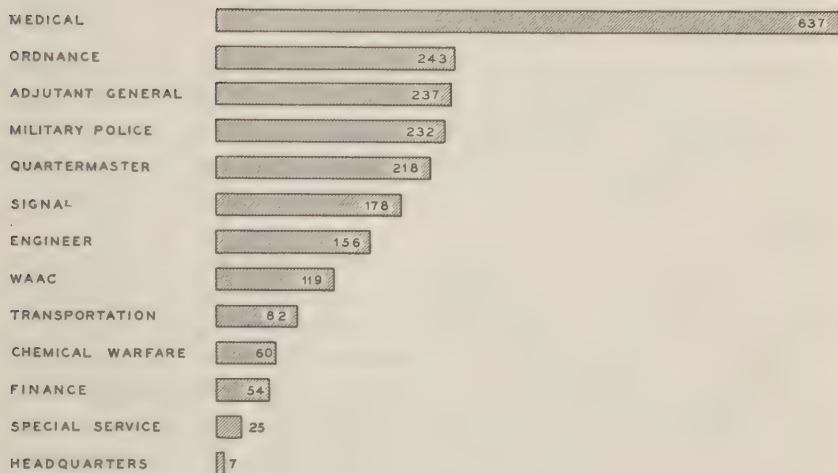
Troop Mobilization

The study of supply problems in overseas theaters meant also the determination of the necessary service units required to supply proposed operations. In accordance with strategic plans presented by the War Department General Staff and on the basis of its own logistical studies, the Army Service Forces determined the number and the organization of service troop units required. The activation of units by the Ordnance Department, the Quartermaster Corps, and other Technical Services was determined according to approved plans determined in the light of overseas needs.

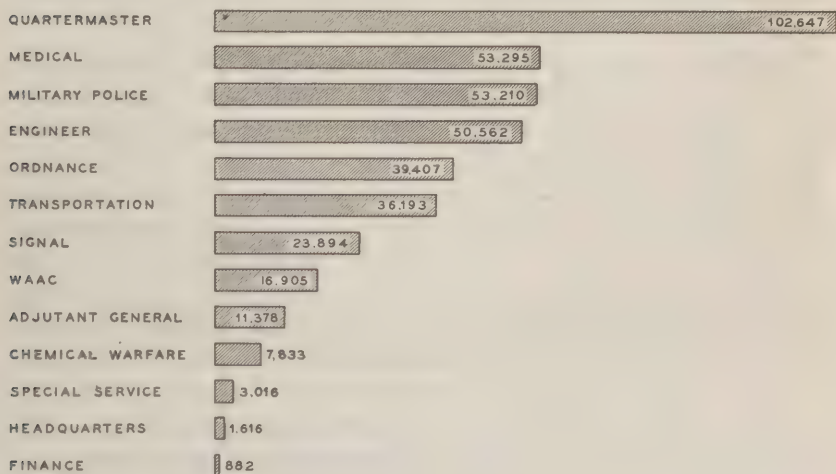
CHART 30

ACTIVATION OF ARMY SERVICE FORCES UNITS FROM 9 MARCH 1942 TO 30 JUNE 1943

NUMBER OF UNITS



TOTAL STRENGTH OF UNITS



The troop units to be provided by the Army Service Forces for overseas operations might be compared to the utility and other services upon whose operation every great city is dependent. A communications system by radio and telephone had to be provided. Police service was required to direct traffic, maintain order in areas where troops were concentrated, and to guard military installations. A medical and hospital service must be provided to the sick and those injured by accident or in combat. Food supplies must be brought in and distributed. Miscellaneous supplies of all kinds, in-

cluding clothing and general equipment, must be provided. Warehouses were needed to store reserve supplies and spare parts. Transportation facilities by rail and by highway were required for the movement of men and goods. Repair facilities were needed to maintain equipment in good order. Gasoline and other fuel had to be available, clothes had to be laundered, and finally, damaged material beyond any possible repair had to be salvaged and returned to the United States for use as scrap.

It took troop units to perform various phases of all this work for every major combat unit—the division, the corps, the army. Furthermore, such troops were needed for the theater as a whole. The Army Service Forces trained these troops. Before the training could begin, the exact types and numbers of such troop units had to be determined and their organization approved.

The assignment of Army Service Forces troop units might be illustrated by Signal Corps units. A division had a Signal company. A corps had a Signal battalion. Field armies needed a Headquarters Signal Company, a Signal construction battalion, a Signal operations battalion, a Radio intelligence company, a Signal depot company, a Signal repair company, a Signal pigeon company, and a Signal photographic company. Ordnance troops include a maintenance company with the division (a battalion for an armored division), a maintenance battalion with a corps, and an ammunition battalion and a supply and maintenance battalion with a field army. Additional troop units of all kinds were provided a theater of operations by the Army Service Forces.

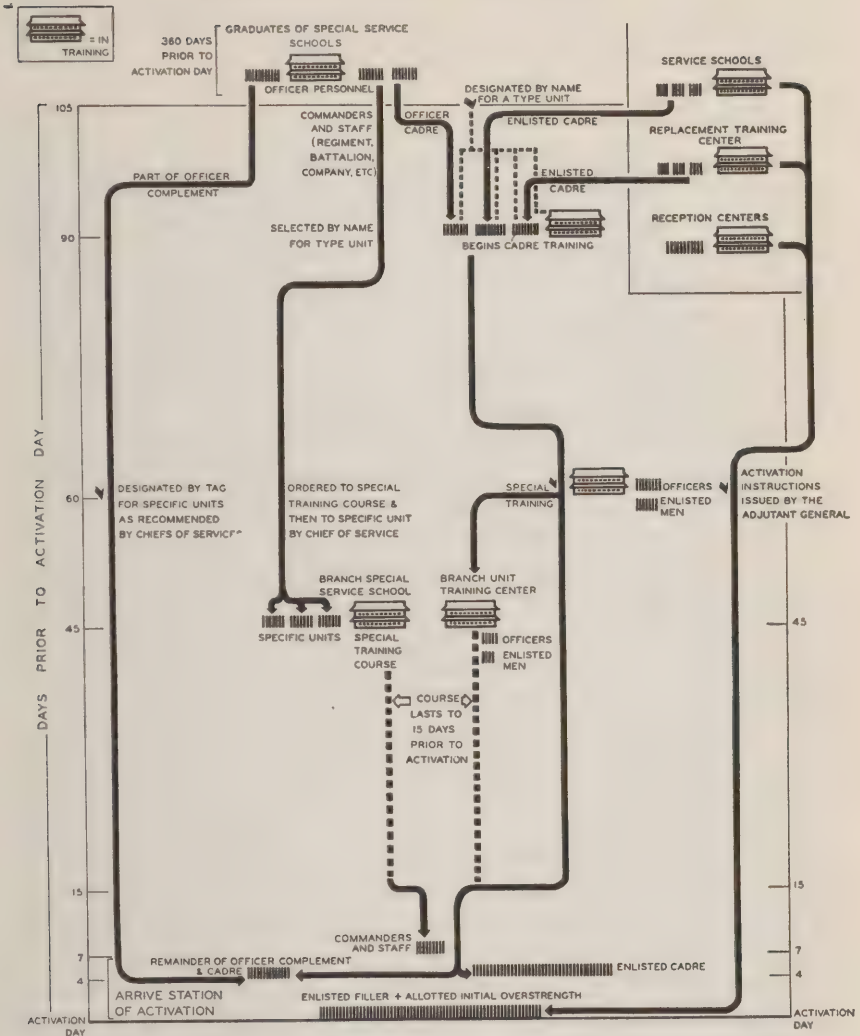
From March 9, 1942 to June 30, 1943 more than 2,200 troop units were activated by the Army Service Forces. The number and strength of such units is shown in the accompanying table. In this same period about 1,000 Tables of Organization were prepared or reviewed.

During the year special studies were made in an effort to create composite Tables of Organization which would provide service troop units with general purpose characteristics. The tendency toward specialization in the training of personnel for service troop units meant that each special unit was required in every theater of major operations. It frequently happened, however, that the work load of the special unit was not sufficiently great to occupy the unit's full time. Furthermore, the tendency toward specialization increased the number of men to be sent overseas and thereby added to the shipping requirements. By constructing general purpose troop units or even troop units capable of performing both Signal and Ordnance jobs, total service troop requirements could be reduced.

On July 1, 1942 two Ordnance Base Regiments were activated and three more were added during the year. These units were expected to serve in theaters of operations. Experience proved, however, that more effective service could be obtained from smaller and more flexible units. In the spring of 1943, therefore, the five Ordnance Regiments were reorganized into individual, numerically designated Ordnance Base Armament Maintenance Battalions. The 4th Battalions of each of the original regiments, formerly

CHART 31

BUILDING A NON-DIVISIONAL UNIT



designated as Ammunition and Supply Battalions, were reorganized into individually numbered Ordnance Depot Companies and Ordnance Ammunition Companies. The Headquarters of these battalions were reorganized as Headquarters and Headquarters Detachments of Ordnance Battalions and numbered as in the case of the companies. The other three battalions of the regiments were reorganized as numbered Armament Maintenance Battalions. The Regimental Headquarters of former Ordnance Base Regiments were reorganized as Headquarters and Headquarters Detachments of Ordnance Base groups.

In the fiscal year 1943 the Army Service Forces set up a standard time table for the activation of service troop units to be assigned to corps, army,

or theater of operations. The flow of officers and men to such troop units is illustrated in the accompanying chart.

The Army Service Forces likewise performed the administrative work in assigning available military housing within the United States to units of the Ground Forces, the Air Forces, and the ASF itself.

Preparation for Overseas Movement

As already indicated, the decision to move particular troop units to particular overseas destinations was made by the War Department General Staff. The responsibility for execution of that decision rested with the Army Service Forces. There were two closely inter-related phases to the task. One was the actual physical movement of men and equipment from home stations to staging areas and to ports of embarkation and then by water transport to an overseas base. At the same time, it was necessary to complete the equipping of troops and to replace any outworn or outmoded equipment. They had also to be provided their immediate supply needs.

In the fiscal year 1943 a revised and improved procedure for the preparation of all units—Ground Forces, Air Forces, and Service Forces—for overseas movement was prepared and published. Under this procedure, as soon as a unit was warned of impending overseas movement, it received an A-2-a priority for the requisitioning and supply of needed equipment to bring its materiel up to full allowance numbers. Supplies were obtained insofar as possible under the new priority through normal procedures, that is, by requisition upon the supply officer in the home post or station. The supply officer in turn requisitioned the required supplies from the nearest depots. It was the responsibility of the appropriate headquarters of the troop unit to go overseas, whether it was Ground Forces, Air Forces, or Service Forces, to bring the unit to its authorized personnel strength.

Station commanders prepared for each unit an initial list of shortages. This list set forth the items of equipment and supply which could not be provided from the station's stocks or by shipment from supplying depots. These lists of shortages were sent immediately to the Chiefs of Technical Services—Ordnance, Quartermaster, Engineers, etc. Information copies of the lists were dispatched to the Commanding General of the Service Command and to the Commanding General of the Army Service Forces. Special efforts were then begun by each Technical Service to meet deficiencies.

The actual movement orders for Army Service Forces units proceeding overseas, and the supply and transportation orders for all units, were prepared by the Director of Operations, Army Service Forces. For movement orders involving troops of the Army Ground Forces and Army Air Forces, the command portions of the orders were prepared by the force having jurisdiction over the troops. The component parts of movement orders were assembled by the War Department General Staff for publication by The Adjutant General.

These orders specified the equipment to be taken by the unit overseas and the supplies to be provided the unit either at the port of embarkation or to be shipped for that unit to its overseas destination by the Technical Services.

Control of the movement of all men and supplies rested with the Chief of Transportation.

During the fiscal year 1943 some 1,000 overseas movement orders with about 300 amendments thereto were issued. The policy was adopted of having all troop units leave behind their general purpose motor vehicles such as passenger cars, ambulances, motorcycles, quarter-ton trucks, 1½-ton trucks and 2½-ton trucks. Furthermore, spare parts were also left behind. These vehicles and spare parts were issued to troops in training. A new supply of motorized equipment and spare parts was provided a unit upon overseas movement. Special provision might also be made in movement orders for the supply of helmets, rounds of ammunition, and other equipment and supplies. The Commanding General of the Army Service Forces was responsible for seeing that all shortages were met by the time a unit sailed overseas. Sometimes this meant obtaining equipment from other units of the Ground Forces, the Air Forces, or the Army Service Forces. Sometimes it meant special efforts to ship equipment straight from production lines to ports of embarkation. Sometimes it meant diverting maintenance or replacement equipment proceeding overseas for other units to the new unit. During the fiscal year 1943 many expedients were required in order to equip completely units proceeding overseas. A standard procedure for the marking of supplies was developed during the past year and a code marking policy committee, representing the War Department General Staff, the Army Air Forces, the Army Service Forces, and the Navy, was created. Uniform special markings were devised for each overseas movement in order to avoid any confusion about destination and about the appropriate unit for which supplies were intended.

A standard time table was also set up for the preparation of units for overseas movement. According to this time table the general plans and the complete troop basis of units for an overseas operation was to be determined 150 days before sailing date. Instructions on equipping troops and upon completing their personnel were to be issued 140 days before sailing date. Movement orders to concentration areas would go forth 90 days before sailing date, and the equipping of troops would be completed 50 days before sailing date. All equipment and supplies for a unit would be available to a port 30 days before sailing and would arrive at the port 15 days before sailing date.

In practice it was often impossible to follow any such time table. The North African expedition afforded a good example. Rather than 150 days before sailing date, the Army Service Forces learned the troop composition of the operation which it would have to supply and move about 75 days before sailing. The complete troop basis of the two American forces—one from England and one from the United States—scheduled to participate in the North African campaign was furnished the Army Service Forces on August 8, 1942. The equipping of the force to leave from the United States had to be completed in three increments—the first on September 20, the second on October 10, and the final increment on October 20. Despite the fact that at that particular time supplies were still inadequate for American troops generally, the task force sailing from the United States at the end of

October was completely reequipped and provided with the latest materiel of all kinds.

Overseas Supply

The initial equipping and transporting of troops to overseas destinations were but the beginning of a continuing responsibility for the Army Service Forces. Once troops reached a theater of operations they had to receive at regular intervals the supplies necessary in order to maintain them. Certain classes of supplies such as food (Class I), fuel, gasoline, oil, and lubricants (Class III), and ammunition (Class V) were expendable in the day-to-day activity of a theater. The maintenance requirements for the equipment of troops (Class II supplies) had to be provided in order to meet the repair and replacement needs of overseas troops. Finally, special construction materials, machinery, and other miscellaneous requirements peculiar to the particular theater (Class IV supplies) had to be provided as needed. All of these supplies had to be forwarded on regular schedule if operations were not to be interrupted, or our troops abandoned.

As mentioned before, the responsibility was placed upon theater commanders to obtain as large a proportion of various types of supplies as possible in the particular area where their troops were operating. In the well developed parts of the world like England and Australia considerable supplies were thus acquired. In other areas where local supplies were virtually nonexistent, the American soldier had to be provided with his complete daily needs.

The Army Service Forces saw to it that supplies of all classes and of all kinds were provided overseas commanders as needed. The supply plans for each theater were prepared or reviewed during the fiscal year. Levels of supply for each theater were fixed in terms of the number of days reserve maintained overseas. These levels had to be sufficient to prevent any disaster resulting from a temporary cut-off in supply. At the same time, unnecessary reserves could not be built up in any one theater at the expense of providing necessary supplies to other theaters or to troops in training. Within each theater itself varying levels of supply were maintained in base, intermediate, and forward zones.

In the preceding fiscal year the policy was adopted of arranging for the automatic supply of overseas theaters. Automatic supply meant that regular quantities of Class I, Class II, Class III, and Class V supplies were dispatched to overseas bases without the necessity of formal requisition by the theater commander. Ports of embarkation of the Transportation Corps were made responsible for shipping these supplies, and each Technical Service purchasing and storing supplies within the United States was made responsible for forwarding to the port of embarkation upon clearance by the Transportation Corps of the supplies needed to meet overseas requirements. For example, between the time of the landing in North Africa on November 8 and the successful conclusion of the Tunisian campaign, 14 convoys with full support requirements for the theater were dispatched from the United States. Special needs were requisitioned by the theater commander and dispatched in addi-

tional cargo convoys. In the first quarter of 1943, General Eisenhower requested equipment for three infantry divisions with their supporting troops to be given to the French. Special cargo convoys were dispatched from the United States to North Africa on the average of every two weeks.

The system of automatic supply did not work entirely as projected and was reconsidered during the fiscal year 1943. The purpose of automatic supply was to lessen the supply levels needed in overseas theaters. If theater commanders were required to requisition all necessary supplies, they would have to maintain sufficiently high levels to insure no interruption in the provision of their own troops. It took time for a requisition to be filled and returned to the overseas theater. By a system of automatic supply needs were anticipated and dispatched without requisition from overseas. Thus assured of a continuous flow of supplies, the theater commander did not have to build up great reserves in anticipation of a time lag between the requisitioning and the filling of his supply needs.

The difficulty encountered in the operation of the automatic supply system was that of estimating accurately the needs of the overseas theater. This difficulty was less pronounced in the provision of Class I supplies than it was for Class II supplies. For fuels, lubricants, and gasoline the system was modified to provide for monthly estimates of requirements from overseas theaters cabled to the Joint Chiefs of Staff. On the basis of these estimates, Class III supplies were dispatched to each overseas theater.

By the end of the year it was decided, for example, to abandon automatic supply of automotive equipment and return to a requisitioning basis. The various types of spare parts shipped to overseas theaters under automatic supply proved undesirable because it led to considerable inventories in a theater of certain spare parts and inadequate inventories of other spare parts. Automatic supply was continued for foodstuffs and for ammunition. Only Class I and Class III supplies on a modified basis were automatically dispatched at the end of the year.

An effective system of automatic supply was dependent upon reliable and detailed information about supply requirements based upon experience tables developed by the Army Service Forces. In a war like the present one, experience tables were lacking and only the best available estimates could be substituted for them.

A major development in overseas supply operation during the fiscal year 1943 was an agreement worked out with the Navy Department for joint Army-Navy supply of specific theaters. For certain theaters the Navy assumed complete responsibility for supply, and for others the Army assumed complete responsibility. In those theaters where the Navy assumed responsibility, the Army provided its proper proportion of requirements to the Navy for shipment to the theater. Since so many of the supply requirements, such as food, fuel, and lubricants, were the same, this system resulted in a substantial saving in ship tonnage in the overseas dispatch of supplies.

Evacuation and Hospitalization

During the fiscal year 1942 a basic system of operations for the evacuation and hospitalization of sick and injured in overseas theaters was established and published. While overseas commanders were given responsibility for planning effective hospitalization and evacuation of their troops, these plans were subject to review by the War Department in order that necessary adjustments or changes might be recommended.

The Medical plan had to give careful attention to such factors as climate in the area, known diseases, the military efficiency of the enemy, and the probable intensity of the campaign. The plan also included the percentage of beds in mobile nondivisional hospitals and in fixed hospitals, medical supplies, laboratory facilities, and needs in special medical units for sanitary and other purposes. The details of these plans were prepared in the Surgeon General's Office.

In general, the evacuation policy was one of as rapid movement from overseas theaters as the condition of the patient and local transportation conditions permitted. In planning the North African campaign, for example, arrangements were made for the evacuation to troop ships of all men wounded in the initial assault upon land objectives. Whenever men could not be restored to active duty in a short period of time or when they required elaborate medical treatment, they were evacuated from the overseas theater.

The policy of rapid evacuation from overseas theaters permitted the most effective utilization of medical resources in local areas without the necessity of adding to them the fixed hospital facilities that were available within the United States. At the same time general hospitals constructed throughout this country were made available for the care of the sick and injured. In this way the nation's hospital and medical facilities were utilized to the fullest degree rather than spread thinly over many different areas.

Air evacuation by the Army Air Forces further speeded up the return of sick and wounded from overseas areas.

VIII

DISTRIBUTION

Ordinarily, when military supplies were delivered by the manufacturer, they were shipped to a depot for temporary storage. On emergency occasions they might move directly from plant to troops in a staging area or to a port of embarkation for overseas shipment. From depots supplies moved to camps within the United States or to ports of embarkation for shipment overseas. Oftentimes depots served as modification centers where changes were made in equipment destined to serve in the north, on the desert, or in the tropics. Auxiliary equipment might also be added at the depot, such as a radio or a machine gun on automotive vehicles. The ultimate destination of all supplies was of course troops of the United States or of the United Nations.

Imagine a battery of anti-aircraft artillery, complete with vehicles, spare parts, cleaning equipment, delicate fire control directors, ammunition, fuzes, and hosts of other parts, carried across an ocean through temperatures changing from 10 degrees below zero to 110 degrees above, subjected to the hurried handling of stevedores in loading, and of soldiers in unloading, . . . but delivered in a condition to be precisely accurate when set up and used. That was the supply operation of Army Service Forces.

The inadequacy of some items of equipment to meet the complete needs of troop units made it necessary to distribute these—called “controlled” items—in accordance with a scheme of priorities. Priorities were assigned various troop units by the War Department General Staff in accordance with the following scheme:

- A-1-a—Testing and Laboratory Units
- A-1-b—Overseas Units
- A-2-a—Units on 30-day alert
- A-2-b—Units on 60-day alert
- A-2-c—Units on 90-day alert
- A-3 —Units on 4-6 months' alert
- A-4 —Units in pool about ready to be alerted
- A-5 —Units in schools and training centers
- A-6 —Units of the Defense Commands
- B —Units in training for some period of time
- C —Units in training but just recently activated.

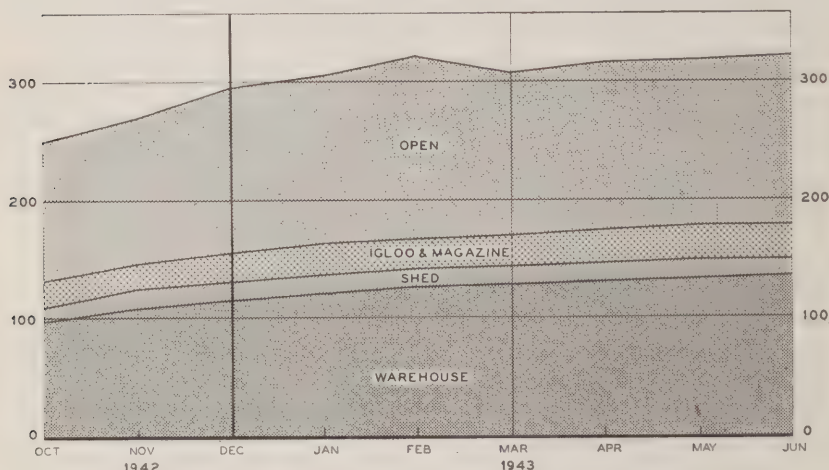
The Army Service Forces directed the distribution of supplies in accordance with the assignments of priority by the War Department General Staff.

Storage

The Army Service Forces operated the largest storage facilities in the nation's history. At the end of the fiscal year 1943 more than 140 million

square feet of covered storage space and 300 million square feet of all types of space was being operated in every state to handle Army supplies and equipment. This amount of space was nearly six times the 52 million square feet of commercial storage space reported in use by the Department of Commerce on January 1, 1943. The Army Service Forces allocated a part of its space to the Procurement Division of the Treasury Department for the storage of Lend-Lease supplies, to the Army Air Forces for the storage of air supplies, and to the Office of Defense Transportation in railroad ground storage. In June, 1943, total receipts and shipments at all depots amounted to 3,700,000 tons.

CHART 32
GROSS SPACE
MILLIONS OF SQUARE FEET



The number of Ordnance depots in operation expanded during the year from 37 to 50 while the sections used in general depots and at holding and reconsignment points grew from 6 to 20. A large part of the increase resulted from the transfer of 19 motor installations from the Quartermaster Corps to the Ordnance Department. Depots handling explosives had to be located in isolated areas. This need created housing and transportation problems which could be met only by constructing nearby dwelling units, together with shopping centers, hospitals, and other facilities. Civilian personnel at depots and field offices expanded from 43,000 to 112,000 during the year. Total tonnage handled in June, 1943, was over 1,600,000 tons.

The Quartermaster Corps, in addition to its own storage facilities, utilized commercial storage space to meet fluctuating requirements. The yearly requirements for certain canned fruits and vegetables had to be purchased during the short period when those items were canned. An entire year's production of some fruits and vegetables was packed during one month, while others were packed in two or three months. The Quartermaster

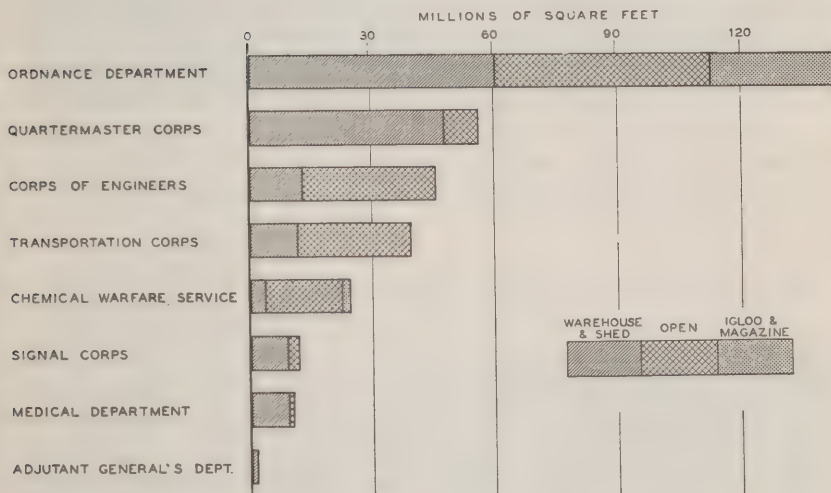
Corps moved its share of the year's pack into commercial warehouses for later distribution.

In July, 1942, the Quartermaster Corps took over administrative responsibility for general depots. Sections of these depots were assigned to various Technical Services while operation of the depot as a whole was performed by the Quartermaster Corps.

By June 30, 1943, approximately 70,000 items of Signal Corps equipment and parts were catalogued. The storage space of over 8,000,000 square feet was scattered through 100 different buildings. In the one month of April, 1943, Signal Corps depots received over 46,000 requisitions requiring the shipment of 90,000 tons of equipment.

The Medical Department had storage space amounting to 13,000,000

CHART 33
STORAGE SPACE BY
MAJOR TYPES
JUNE 30 1943



square feet by the end of the year, an increase of over 80 percent. Storage space of the Chemical Warfare Service expanded 10½ times, from 2,000,000 square feet to 23,000,000 square feet. In April, 1943, a total of 86,555 tons of supplies were handled by these depots. The storage space for supplies of the Corps of Engineers expanded from 5,300,000 square feet to 43,500,000 square feet. Total tons received and shipped grew from 135,000 tons in July, 1942, to 347,000 tons in June, 1943.

Much emphasis was placed during the fiscal year 1943 upon the use of modern proven commercial practices in the conduct of storage operations. "The Warehouse Manual" incorporating the latest policies and procedures was published in the summer of 1942 and reprinted twice thereafter. Current statistical data were maintained on space and capacities of all warehouses, and traveling representatives of Headquarters, Army Service Forces,

aided and advised depot commanders in the conservation of space, in its efficient utilization, and in modern methods of materials handling. More than 150 exchanges of space were made in the year between the Technical Services, involving some 80 million square feet of space.

A course in modern methods of warehousing and materials handling was instituted during the year for all warehouse officers at Camp Lee, Virginia. Appropriate training films were developed and shown in all depots. Personnel training programs at the depots were also developed and encouraged.

A major achievement during the fiscal year was the development of the "pallet-ized" load. This method of loading consisted of strapping a number of boxes or other units of supply to a pallet or sled at the manufacturing plant or arsenal. The pallet was then kept intact for movement from the plant or arsenal to the depot. This method of handling materials was found particularly adaptable to small arms ammunition, wire, gas masks, and similarly packaged items. It materially reduced the manpower requirements normally necessary in handling the shipment of supplies from manufacturers and arsenals to depots and to ports. The development of modern methods of materials handling by machinery permitted the use of pallet-ized loads which could not be handled by manpower alone.

The scarcity of materials handling equipment led to its careful allocation by the War Production Board. The Director of Operations of the Army Service Forces was responsible for estimating the requirements of ASF depots and ports for such equipment and for insuring that the equipment allocated to the Army Service Forces was efficiently used.

Stock Control

The shortage of certain critical items of equipment during the fiscal years 1941 and 1942 led to careful control in their distribution. During the past fiscal year with a general improvement in the availability of supplies, the entire system of issuance was overhauled and placed on a uniform basis. It still remained necessary, however, to follow the priorities system for the issuance of controlled items of equipment.

Under the normal method of supply procedure within the United States, as already indicated, supply officers of troop units requisitioned needed items from the supply officer of an Army camp, post, or station. Station supply officers in turn requisitioned supplies from the appropriate depots.

Two difficulties arose in the operation of this system of supply, particularly under war-time conditions. In the first place, there was no adequate central source of information about the levels of supply maintained in a particular post or station. It was altogether possible for a supply officer of an Army post to accumulate large quantities of certain types of supplies in post warehouses. The rate of movement of these supplies from the post into the hands of actual troop units was also unknown. Levels of supply of a particular item might be more than adequate at one Army post and inadequate at another. At the same time depots had no adequate basis for estimating the demands for supplies that might be made upon them by post supply officers.



The "Pallet-ized" Load.



A second difficulty in the supply system was a lack of knowledge about quantities of supplies consumed as initial issue to newly activated troop units and quantities issued for replacement or maintenance.

To meet these two needs a definite system of stock control was established in January, 1943, in order to provide for a more equitable distribution of supplies in the continental United States, to locate reserves for contemplated operations, and to assure by definite facts and figures that the needs of the Army were supplied, but not oversupplied. A new Stock Record Account to be maintained by all post supply officers became effective on June 1, 1943. This Stock Record Account was designed to show the quantities of an item provided on initial issue to a newly activated unit, the quantities issued as replacement or maintenance, and items transferred to other stations or returned to depots. The Stock Record Account further provided for a running balance of available supply and a reorder level below which point the supply officer was to requisition a depot for replacement to his normal maximum level. For most items of issue a normal maximum level to be maintained at a post was 90 days' required supply. For certain items this maximum level might be smaller and for a few items, such as laundry supplies and medical supplies, it was larger. The maximum level was to be adjusted upon the basis of actual experience over a period of time in the monthly issuance of supplies.

In addition to the Stock Record Account, a stock status reporting system was set up to provide depots and the Chiefs of Services with a periodic check on the stock status at a station. These reports permitted depots to gauge the volume of stock they would have to maintain with relation to past issue experience.

Under the new stock control system post supply officers were authorized to establish a schedule under which troop unit supply officers would requisition supplies. In this way post supply officers were able to stagger the inflow of requisitions and thus equalize their supply activity over each monthly period. Similarly, station supply officers could submit monthly requisitions to supply depots only in accordance with the schedule set up by the depots. Under unusual circumstances, of course, supply officers might submit requisitions immediately to a post or to a depot regardless of the monthly schedule.

The entire system of stock control was expected to bring supply procedures under a more orderly, systematic management than had previously been the case.

Considerable attention was given during the year to reducing the administrative procedures in filling requisitions. The Medical Department, for example, delegated final action on most requisitions to the depots handling drugs and medical supplies. In the last six months of the fiscal year it was estimated that the time required to fill requisitions was reduced 50 percent.

The Ordnance Department set up seven field service zones in September, 1942, to coordinate depot activities. The zones were abolished in April, 1943, when it was concluded that the new level of organization merely consumed more time. Instead, greater authority was delegated to depots and

other field offices to handle distribution without reference to Washington. The Corps of Engineers set up an office at one of its depots to administer distribution activities within the United States. Liaison offices were set up near ports of embarkation to handle supplies for overseas shipment. In one case, supplies for an overseas operation were collected at one depot from many other depots and shipped to a port of embarkation for combat loading—all within 20 days.

Maintenance

Within the United States the Army Service Forces was responsible for providing base maintenance and repair services to Ground Force units. Large base shops were established at various camps and other installations.

Maintenance of Army equipment was, of course, first the responsibility of the using troops. Many repairs, furthermore, were performed by mechanics and light maintenance units attached to troop units. On the other hand, within the United States large-scale rebuilding and other maintenance operations were performed by the Army Service Forces. On April 1, 1943, all maintenance operations by Service Commands and by installations of the Technical Services were brought under central direction by the creation of a Maintenance Division in Headquarters, Army Service Forces. Uniform policies and techniques were then created for the operation of all maintenance activities.

Increased attention was given during the year to adequate instruction in preventive maintenance. A Preventive Maintenance Board was set up in January, 1943, in the Ordnance Department with representatives from Army Ground Forces and Army Air Forces. The effort was made to standardize procedures and instruction throughout the Army.

The peacetime practice of discarding slightly worn parts and replacing them with new ones had to be abandoned. Unserviceable parts were reclaimed in increasing quantities. Such devices were resorted to as chrome plating piston pins and cylinder walls and then refinishing them to standard size. At one Ordnance depot in ten months it was estimated that \$250,000 was saved by reclaiming critical parts and assemblies.

The distribution of spare parts had to be carefully arranged by all Technical Services. Balanced assortments of standard parts were procured and distributed. All services experienced an increasing demand for parts. Standard sets of maintenance equipment for performing repair jobs were also developed.

The seven Technical Services of Army Service Forces employed some 3,400 civilian technicians in an advisory or supervisory capacity for the repair and reclamation of Army equipment. These technicians were used to instruct mechanics, to supervise shop activities, and to advise Army officers about maintenance activities. Through their assistance standards of preventive maintenance were raised, the training of maintenance troops expedited, and damaged equipment speedily repaired and returned to troops.

Over 1,200 civilian automotive advisors were used to assist in training of military personnel in the maintenance of automotive equipment. After

the 1941 Army maneuvers in the United States, it was evident that the maintenance of automotive equipment was a major military problem. All possible measures for the conservation and effective utilization of motor vehicle equipment had to be adopted. Qualified automotive maintenance men from American industry were then employed to assist Army officers in providing for the proper preventive maintenance of vehicles. In this way knowledge gained by years of experience in automotive maintenance was passed on to the Army. These steps had to be taken by the Army Service Forces in order to reduce the demands upon maintenance facilities and replacement supply.

Private industrial organizations in the United States provided some 250 civilian observers to accompany field forces overseas. Almost all engineers of high standing, these experts served mainly without expense to the U. S. Government. They went to such places as Cairo, Australia, Hawaii, England, the Southwest Pacific, North Africa, and elsewhere. The reports returned by them to the Army Service Forces were of great value in providing in-training maintenance troops and in providing maintenance supplies. As of June 30, 1943, one of these men was reported killed in a combat operation and another captured by the enemy.

In those localities where it was impossible to obtain adequate commercial service for troops, the Army Service Forces adopted the policy of buying laundries rather than constructing them, if this could be done without serious interference with civilian service. Such a policy saved critical materials and time. Five dry cleaning plants were constructed during the year in areas where commercial facilities were inadequate to serve the Army. The Army Service Forces obtained authority to make contracts for commercial laundry and dry cleaning service required by individual enlisted men and to deduct the cost from payrolls as was done in the case of Army-operated laundries and dry cleaning plants.

During the fiscal year 1943 with shortages of raw materials becoming more critical to the procurement program of the War Department, new emphasis was placed upon the salvaging of equipment no longer suitable for use. The procedures for declaration of equipment as unusable were simplified and responsibility placed upon the using unit rather than upon inspecting officers. Such equipment was immediately turned over to supply officers in Army posts. In turn, post supply officers disposed of junked material through commercial channels.

Much valuable property was received by the Army Service Forces from the Civilian Conservation Corps and redistributed to various branches of the Army, the Navy, and the Marine Corps, as well as to prisoner of war camps and to internment camps of the war relocation authority.

Distribution Data

By June 30, 1943, \$19,000,000,000 of major ASF items of equipment had been made available for distribution since July, 1940. Of this amount, \$15,000,000,000 had been shipped from supply service depots or issued

direct from manufacturers' plants and \$4,000,000,000 of equipment was in storage.

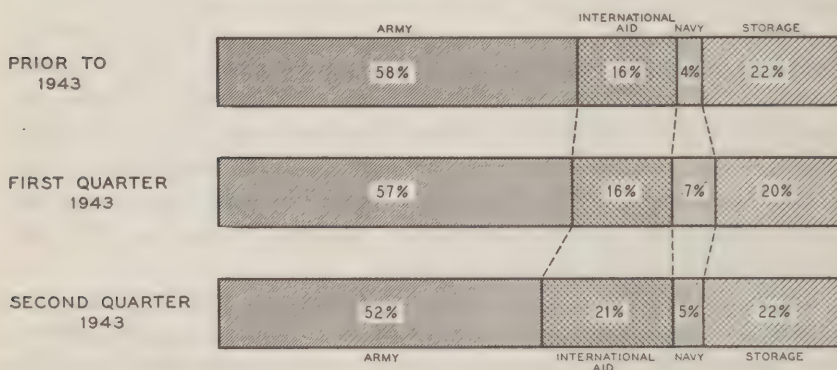
These totals grew rapidly. In the first four months of 1943, the quantity made available for distribution equalled half the total accumulated in the entire period of armament prior to 1943. The total through December, 1942, was \$11.1 billion against \$8 billion for the last six months of the fiscal year 1943.

Of the total made available for distribution for the entire period through June, 1943, \$12.6 billion represented Ordnance items, \$3.4 billion Quartermaster items, \$1.1 billion Signal Corps items, and the remainder distributed among the other Services.

The amounts allotted to the various recipients have tended to remain fairly stable, as the accompanying chart shows. These data show that over half of major ASF items were issued to U. S. Army troops; between 16 percent and 21 percent went to our Allies; approximately 5 percent was procured for the Navy; and the balance went into storage for later distribution.

CHART 34

**DISTRIBUTION OF MAJOR ASF ITEMS
COMPARISON FOR SELECTED PERIODS**



IX

TRANSPORTATION

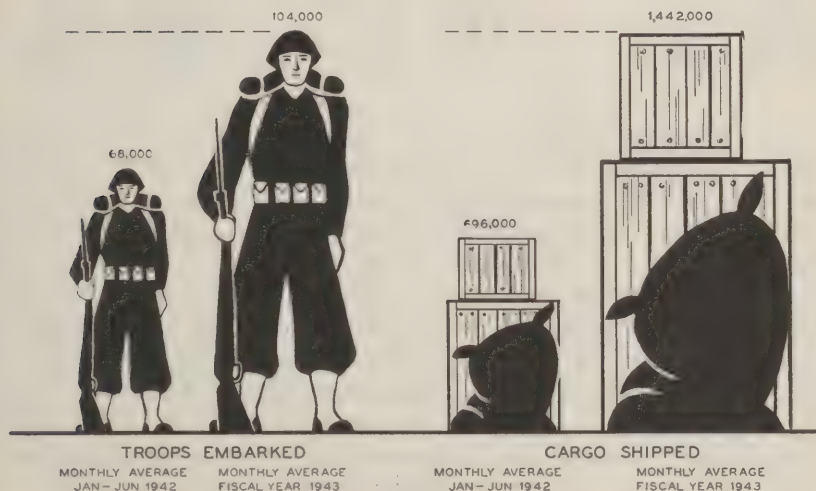
At the beginning of the fiscal year 1943 the Army Service Forces had 359 ocean-going vessels of 1,000 gross tons or more in service. The freight capacity of these vessels was 2,820,000 measurement tons and the troop capacity was 139,000. On June 30, 1943, the Transportation Corps was operating 719 ships with a freight capacity of 6,500,000 measurement tons and a troop capacity of 210,000.

These ships did not include vessels carrying troops or cargo on a commercial or space-charter basis. The ships in Army service were Army owned, Army chartered, loaned by the Navy, and allocated by the War Shipping Administration. Of the 719 ships in Army service on June 30, 1943, 102 were troop ships and 617 were cargo vessels, although the latter carried a limited number of troops. Vessels allocated by the War Shipping Administration to the Transportation Corps reverted to the former's control when they had completed their voyage from the United States to an overseas destination.

During the fiscal year 1943 a total of 1,250,000 passengers were embarked at United States ports for overseas destinations. Also, over 17 million measurement tons of cargo were shipped overseas on vessels in the service of the Army. The monthly average of embarkations and of overseas cargo shipment in the year was substantially larger than the monthly average for the last half of the fiscal year 1942, the first increasing by 50 percent and the second by 100 percent.

CHART 35

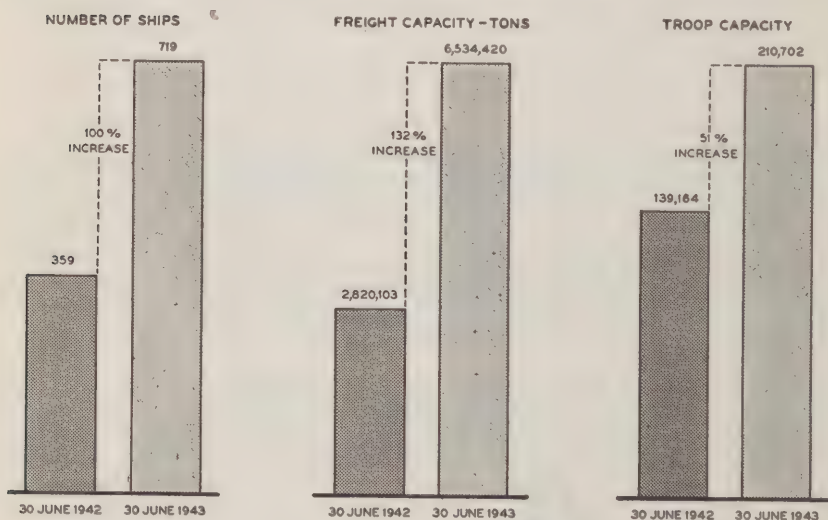
OVERSEAS TRANSPORTATION ARMY SERVICE FORCES



The increase in the strength of the forces overseas and the growth of the fleet in the service of the Army were accompanied by an expansion of facilities at ports of embarkation. A number of new subports were also added during the year. On July 1, 1942, there were 7 ports of embarkation in operation—Boston, New York, Hampton Roads, Charleston, New Orleans, San Francisco, and Seattle. Subports were located at Los Angeles, Portland, and Prince Rupert. During the year cargo ports were activated at Philadelphia and Baltimore and subports were activated at Mobile, Juneau, Skagway, and Excursion Inlet. The number of general cargo berths increased two-thirds during the year while the number of ammunition loading berths was expanded three times. To provide temporary storage for shipments of ammunition and explosives awaiting movement overseas, small storage installations were constructed back of 8 ports.

CHART 36

OVERSEAS SHIPPING IN SERVICE OF ARMY VESSELS OF 1000 GROSS TONS OR MORE



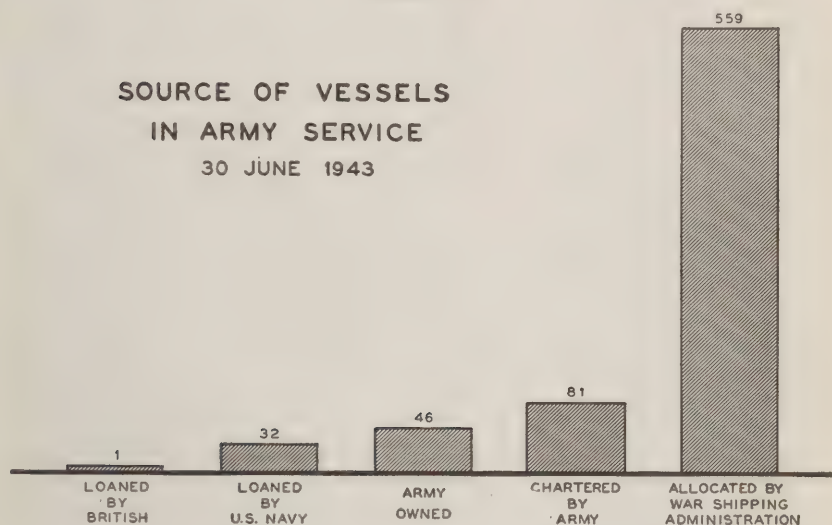
The capacity of staging areas near ports of embarkation was increased from 174,000 troops to 225,000 troops during the year. With the completion of specially constructed staging areas having a capacity of 200,000 troops, large sections of Army camps which had been temporarily used for staging purposes were turned back to their regular use.

All freight shipments by rail in any part of the United States to a port area for overseas transit had to have a release under a block permit before a common carrier could accept them. The block permit system was operated by the Transportation Corps of Army Service Forces. Shipments by any government agency to an overseas destination received individual releases from the Office of the Chief of Transportation. For other shipments releases were issued by the War Shipping Administration. General policies govern-

ing the issuance of block permits and individual releases for the movement of supplies to ports came from the Transportation Control Committee on which the War Department, the Navy Department, the War Shipping Administration, the British Ministry of War Transport, the Office of Defense Transportation, and other agencies were represented. On the basis of estimates of the available cargo space, this committee determined what cargo should be released to enter port areas.

The Transportation Corps, as already noted, received most of its vessels on allocation from the War Shipping Administration. All troop carrying vessels for Army use were assigned to the Army and operated by it.

CHART 37



Freighters allocated to the Transportation Corps were loaded by the Army and sailed under its direction. Upon completion of the out-bound voyage, the homeward employment of allocated vessels was determined and controlled by the War Shipping Administration.

In transporting and maintaining an army overseas, the objective was a balance in which no soldier stood idle for lack of essential supplies, and no supplies were built up overseas for soldiers who would not be there to use them. In other words, the capacity to transport men had to be balanced by the capacity to ship equipment and supplies.

The relationship between the capacity to transport men and the capacity to haul cargo varied continually. By June 30, 1943, for all theaters of operations the initial movement of men required an average of 6 measurement tons of cargo space per man. Maintenance requirements averaged one measurement ton per man. These requirements represented the result of a steady decline since December 7, 1941. Overseas needs were reduced to bare essentials. The acquisition of local supplies helped reduce shipping requirements. Improved shipping practices, including the boxing of vehicles for overseas assembly, saved considerable shipping space.

The balance between cargo shipping capacity and personnel shipping capacity was, of course, affected by the available supply of both. Available supply varied with such factors as existing inventory of vessels and requirements for other than War Department shipments. A vital factor was turn-around time. This depended not only upon the distance to a port of debarkation, but also upon the dangers attending the voyage. If a convoy was required, turning around time was increased because the speed of a convoy necessarily had to be geared to that of the slowest vessel in the convoy.

By June 30, 1943, general balance between cargo lifting capacity and troop lifting capacity was in prospect. At the beginning of the fiscal year there was an acute shortage in troop lifting capacity. The demands for transport vessels were met by converting existing passenger ships and certain selected cargo ships. The U. S. Maritime Commission began the construction of a number of transport vessels for delivery to the Army in 1943 and 1944. Transport capacity was also obtained from the British Ministry of War Transport. During the fiscal year 1943 a total of 60 ships of all kinds were converted to increased passenger capacity by the War Department.

The day-to-day distribution of available shipping space was performed by an Allocations Committee of the War Shipping Administration and the War Department. In such areas as the Port of New York, the Transportation Corps and the War Shipping Administration worked together on almost an hourly basis.

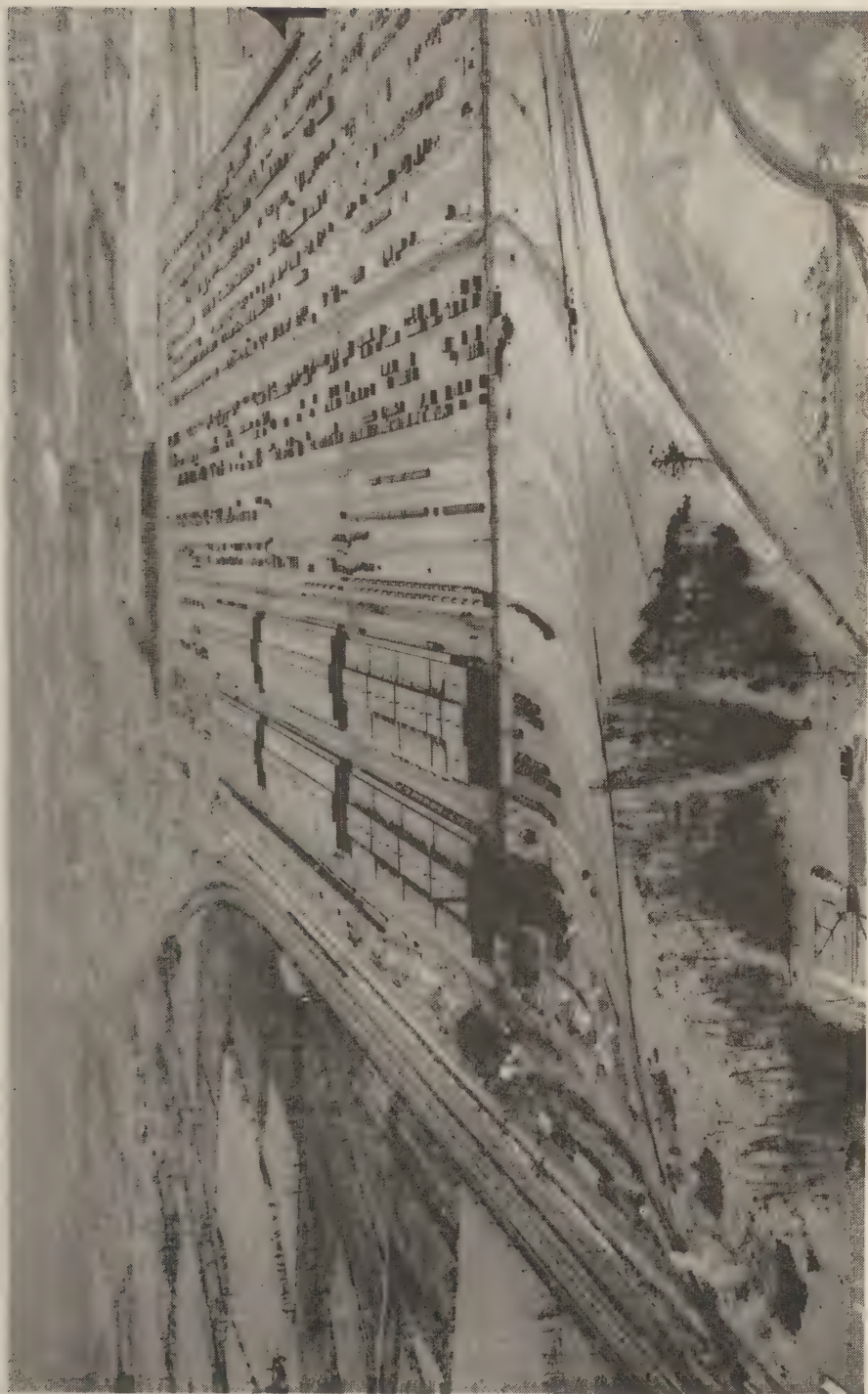
By June 30, 1943, the Transportation Corps had over 4,000 harbor craft of all types in operation. At the end of the preceding year there had been 1,200 such craft. From a very small beginning, the barge service to Alaska developed into a major transport operation. With the expansion of facilities at the Prince Rupert subport and the installation of subports at Juneau, Skagway, and Excursion Inlet, the Alaska barge line saved a substantial amount of deep draught shipping by deliveries to ports on the inside passage. Supplies were then shipped in ocean-going vessels across the Gulf of Alaska.

The steady decline of submarine losses during the fiscal year 1943, as well as the increase in United Nations inventory of ships through new construction, made shipping prospects at the end of the fiscal year increasingly favorable. The protective measures of the Army Air Forces and of the United States Navy permitted the Army Service Forces steadily to expand the men and supplies transported overseas.

Holding and Reconsignment Points

At the beginning of the fiscal year 1943 the Transportation Corps operated three holding and reconsignment points located at Marietta, Voorheesville, and Richmond. Three other points were in process of activation—Montgomery, Shreveport, and Pasco. Three additional holding and reconsignment points were set up during the fiscal year, one at Lathrop, one at Yermo, and one at Elmira.

The holding and reconsignment points provided in-transit storage facilities for supplies and equipment on the way to Atlantic, Gulf, and Pacific ports



A Holding and Reconsignment Point.

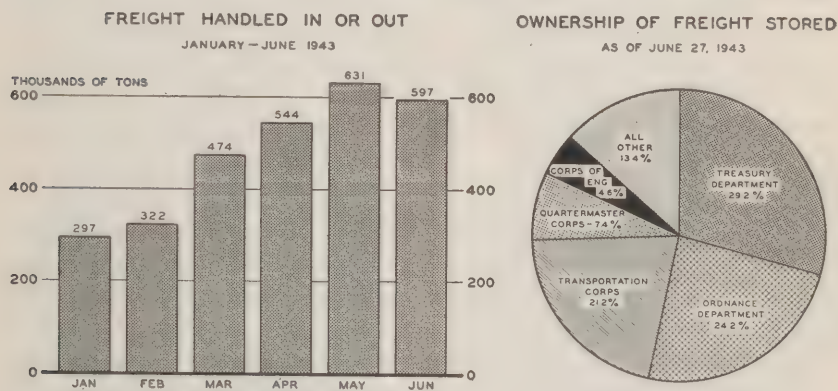


for overseas shipments. By June 30, 1943, these 9 points had a gross total of 9,800,000 square feet of warehouse space and 23,000,000 square feet of open storage space. In addition, the Transportation Corps operated 2,600,000 square feet of open storage at Ravena, New York, as an adjunct to the Voorheesville holding and reconsignment point. About one million square feet of open space at Elmira and 400,000 square feet of warehouse space at Marietta was allocated by the Army Service Forces to the Treasury Department. An additional holding and reconsignment point to be operated by the Transportation Corps for lend-lease supplies was planned at the end of the year.

In July, 1942, the holding and reconsignment points then in operation handled a total of 90,000 tons in or out. In December, 1942, the first month in which all 9 points were in operation, the tonnage handled was 347,000. In May the tonnage handled had increased to 631,000.

CHART 38

FREIGHT AT HOLDING AND RECONSIGNMENT POINTS



The cost of handling each ton of material declined steadily during the year. At Richmond Holding and Reconsignment Point, for example, the cost per ton was \$7.14 in July, 1942, while in June, 1943, it was \$2.93.

At the end of the fiscal year 1943 some 30,000 carloads of freight were held in storage at holding and reconsignment points. 18,000 carloads were held in open storage and nearly 12,000 in closed storage. The division ownership of this freight is shown in the accompanying chart.

The labor employed at holding and reconsignment points fell into three general classifications. At Richmond, Yermo, Lathrop, and Pasco, civilian labor was provided by contractors. At other points civilian labor was employed on a civil service basis. Also at Yermo two quartermaster service companies were utilized because its isolated position made it difficult to obtain civilian laborers, guards, and fire fighters. Originally the usual agreements with railways about the use of holding and reconsignment points provided for an interchange of demurrage debits, and credits among various

types of War Department freight. Such debits and credits were not interchanged, however, among War Department, Treasury Department, and Federal Surplus Commodities Corporation freight. Negotiations undertaken during the year liberalized these rules so that the railroads agreed to an interchange of debits and credits for all government freight handled at holding and reconsignment points and elsewhere. Prior to December, 1942 accountability for lend-lease materials stored at holding and reconsignment points was assumed by designated port agencies. In that month it was arranged that accountability should follow the materials. Accordingly, each service appointed its own supply officer to each point for the purpose of assuming accountability for its supplies. The effort was then made to reduce the system to one of simple jacket accountability. Finally, to correct difficulties in property accountability, it was decided that accountability of materials enroute to overseas destinations should terminate upon arrival at a holding and reconsignment point.

Because of anticipated large military operations, overseas, steps were taken to accumulate transportation equipment in advance at holding and reconsignment points. Thus it was available for immediate shipment. At the end of the year more than 6,000 carloads of such equipment was stored in transit at various points. Considerable attention was also given during the year to reducing cross-hauls and unnecessary movements of supplies. A Distribution Planning Board was set up to assist in this operation.

Inland Transportation

In the 12 months ending June 30, 1943, more than 21,000,000 passengers were moved within the United States by commercial carrier on War Department requests. The distribution of this passenger traffic by type of carrier is shown in the accompanying chart.

The monthly average of 1,700,000 passengers moved during the fiscal year 1943 represented an increase of a million passengers over the monthly average of some 740,000 persons moved during the six months, January to June, 1942. About two-thirds of the total passengers moved during the fiscal year 1943 were in parties of 40 or more routed by the Office of the Chief of Transportation. The average miles per trip ranged from 715 miles in October, 1942, to 875 miles in March, 1943.

More than 76,000,000 tons of freight were moved in the continental United States on War Department bills of lading during the fiscal year 1943. The monthly average was more than twice the average tons of freight moved each month during the 6 months from January to June, 1942.

The Transportation Corps assumed the role of freight forwarder for its own less than carload shipments moving between certain areas on July 1, 1942. At that time the first Army consolidating station opened in Chicago and Army freight distributing agencies were opened in San Francisco and Los Angeles. Subsequently, consolidating stations were established at New York and Philadelphia and distributing agencies were added at Seattle, Spokane, Tacoma, Portland, and San Antonio. Arrangements were also made for the

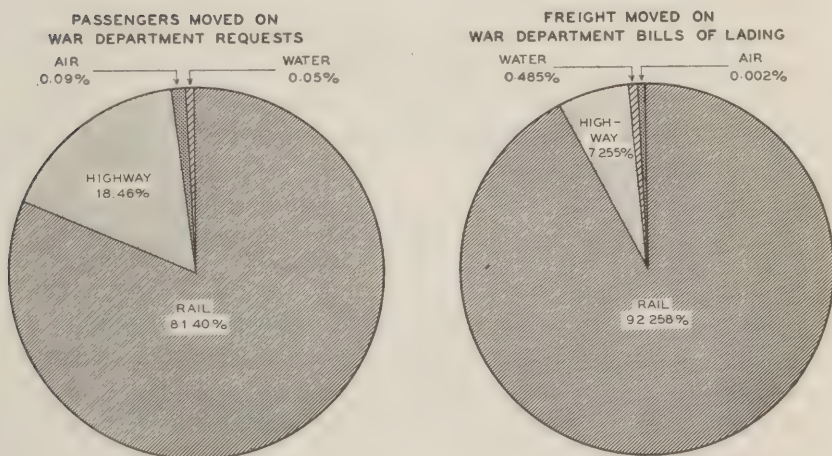
Fort Worth Quartermaster Depot and the Ogden Arsenal to perform the functions of a distributing agency.

In addition to forwarding pool cars to the distributing agencies, consolidating stations also forwarded cars to other Army installations receiving sufficient tonnage to permit consolidation. On February 15, 1943 Army consolidating stations began to handle Navy Department less than carload shipments. Beginning May 31 stations and agencies were redesignated Army-Navy consolidating stations and Army-Navy distributing agencies.

During the fiscal year 1943 a total of over 16,000 consolidated cars were shipped from the three stations, aggregating almost 600,000,000 pounds of freight. And the volume grew steadily, amounting to nearly 100,000,000 pounds in the month of June, 1943.

CHART 39
WAR DEPARTMENT INLAND TRAFFIC
CONTINENTAL U.S.—FISCAL YEAR 1943

RAIL—HIGHWAY.—WATER—AIR



Army reservation bureaus to handle requests for pullman space were established by the Transportation Corps in 28 key cities throughout the country. No space priority was established for rail travel, but the railroads made daily allotments of space on specified trains to fill War Department needs. This practice greatly facilitated the handling of travel requirements. In May, 1943 the Army reservation bureaus arranged for some 73,000 space reservations and in June, nearly 100,000. This service substantially reduced the time lost by War Department personnel because of delays in obtaining pullman space.

The Army Transportation Corps was responsible for the operation of the Army tank car fleet and for the operation and maintenance of utility railway equipment at certain Army installations in the United States. At the end of the fiscal year the Army railways were operating 449 locomotives compared

with 227 on June 30, 1942. The number of tank cars during the year grew from 2,264 to 2,739. The number of freight cars expanded from 453 to 536. 26 new hospital cars were added during the year. Tank cars operated a daily average per car of 72.5 miles in the fiscal year 1943 compared with 39 miles in 1942.

A considerable savings in railway freight charges accrued to the War Department during the year from the extension of storage-in-transit arrangements for export shipments. These arrangements were negotiated with American railways by the Office of the Chief of Transportation. New rate quotations were made applying to general suppliers stored in transit at 76 Army installations, to ammunition stored at 26 storage depots and at back-up facilities near ports, to tanks and other automotive equipment held for inspection and processing at tank depots, and to certain kinds of food held for storage at commercial warehouses under the so-called Kansas City plan. Storage-in-transit arrangements were also made with the Canadian railways.

Savings in freight charges amounting to several millions of dollars annually will also result from adjustments in railroad rates negotiated during the year and from more favorable classification ratings obtained for commodities peculiar to War Department traffic. As an example of the latter, a reclassification of searchlights in carload lots permitting shipment uncrated expected to effect a saving of more than \$500,000 in freight during the calendar year 1943. Several hundred motor freight carriers were added during the year to the list of those who equalize land grant rates on routes in competition with land grant railway lines.

Under Public Law No. 779, 77th Congress, approved on April 1, 1942, the Secretary of War might provide supplementary transportation facilities for the use of workers at War Department owned plants or at other war plants. Supplementary transportation could not be provided, however, without a Certificate of Necessity attesting that existing transportation facilities were inadequate. Requests for such certificates were cleared with the Office of Defense Transportation. These requests set forth full details about the local transportation situation and the need for supplemental transportation facilities.

The Transportation Corps established a pool of busses to operate in the areas of transportation shortage. These busses were converted haulaway trucks formerly used to transport automobiles. Other busses were provided by putting new wooden bodies on old passenger automobiles. During the fiscal year, 822 vehicles were supplied from this pool to meet local transport needs.

The Transportation Corps also promoted a plan for the better utilization and maintenance of private automobiles belonging to war workers. Under this plan the participating industries established transportation departments within their plants to study conditions and to promote group riding, adequate maintenance of equipment, and equitable rationing of gasoline.

For the motor transportation of Army freight, the Transportation Corps obtained an exemption from Office of Defense Transportation regulations limiting trucks to a 35 miles per hour speed. A plan of identification for

commercial trucks carrying War Department supplies was worked out on a national scale. As the shortage of replacement parts became more acute, the Transportation Corps assisted commercial motor carriers in meeting their requirements.

Field Organization

The field agencies of the Transportation Corps were reorganized on December 1, 1942, when nine transportation zones were created. The zones corresponded to Service Command boundaries and had their headquarters in the same cities. The zone offices coordinated the activities of holding and reconsignment points, procurement offices, highway agencies, regulating agencies, traffic control agencies, port agencies, district transit storage offices, and distributing agencies.

Contributions to Overseas Operations

Transportation planning for overseas military operations was a continuing responsibility of the Army Service Forces. Data was collected about port, railway and highway facilities in foreign areas and estimates of available ocean shipping for potential movements were kept up-to-date. Much data was prepared for the use of the Casablanca conference in January, 1943.

Comprehensive tabulation of basic data was also prepared for the Trident Conference held in May, 1943. Estimates which had been prepared for the Casablanca conference were revised in the light of new assumptions and potentialities.

The contributions of the Transportation Corps to the North African invasion illustrated the scope of the work of the Army Service Forces in assisting overseas operations. These activities included the movement of troops with their equipment and supplies from camps and depots to the ports of embarkation, the assembling of troop and cargo transportation for their loading, the provisions of troop organizations and equipment to man overseas ports and railways, and the maintenance of a steady flow of supplies to maintain the forces overseas. The North African campaign was the first experience in combat loading of an assault convoy for an amphibious operation of such magnitude. Valuable lessons were learned from that experience. Reports covering the assault and later convoys were carefully studied in order to make detailed improvements for subsequent operations. Cooperative arrangements were made with the War Shipping Administration and with the Navy Department to reduce future casualties.

Mobile port units arrived at Casablanca and Oran within a few days of the landing of the assault forces. Working under severe difficulties these units made rapid progress in establishing order on the docks and in speeding the unloading of ships. Native labor was organized and utilized so far as possible to supplement the troops. The extensive use of pre-arranged signs proved very helpful in facilitating operations on the docks. The local harbor equipment which had not been destroyed in the original assault was supplemented by equipment shipped from the United States. Small vessels were provided

for short coast-wise runs. By the end of the year large numbers of Transportation Corps units were working in North Africa.

American railway troops and equipment were placed in the North African theater as soon as the military situation permitted. All railways of the Chemins de fer Algeriens and most of the Chemins de fer Tunisia line were operated by the military railway service. Railway operating battalions, shop battalions, and railway grand divisions, staging area battalions, and other units were sent to the theater. A considerable number of locomotives and railway cars were also dispatched to North Africa.

Although not an active theater of operations, the Persian Gulf area was a good example of transportation accomplishment under U. S. military control. The importance of lend-lease aid to Russia and the desirability of finding an alternative to the Northern Sea route led to the development of the Persian Gulf ports to supply the Russians. The improvement of existing port installations and the extension of railway facilities was undertaken by U. S. Army Transportation personnel. A greatly increased movement of freight through the area thereby resulted. American units took over complete control of one of the ports on January 30, 1943. Another port was taken over on February 18. The number of ships unloaded each month by April, 1943 was three times greater than the monthly average in 1942.

Railway operating units were dispatched to the Persian Gulf Service Command to assist in railway activities. The monthly tonnage moved over Iranian railways more than doubled between January and June, 1943.

During the fiscal year some 1,000 locomotives and 7,000 freight cars were provided overseas theaters. Also, nearly 3,000 units of floating equipment were sent to overseas theaters and bases by June 30, 1943.

Ports of embarkation were responsible for the regular dispatch of automatic supplies for overseas theaters. Requisitions from overseas theaters were received at ports and arrangements promptly made through the Technical Services of Army Service Forces for immediate movement to the port for overseas shipment. Special arrangements were made during the year so that whenever cargoes were lost at sea by enemy action, new replacement supplies were immediately dispatched.

X

TRAINING

The determination of types of units to be activated by the Army Service Forces was but the signal to begin their creation. The major responsibility was to train these units for assignment to overseas duties, or to combat divisions when activated in the United States.

Replacement Training Centers

Enlisted men assigned to the Army Service Forces at reception centers were sent to one of seventeen replacement training centers operated by the Army Service Forces. There was one replacement training center each for Military Police, Ordnance Department, Transportation Corps, Chemical Warfare, and Finance Department troops. There were four centers for Medical troops and three centers each for Signal Corps and Engineer troops. Two replacement training centers were operated for Quartermaster troops.

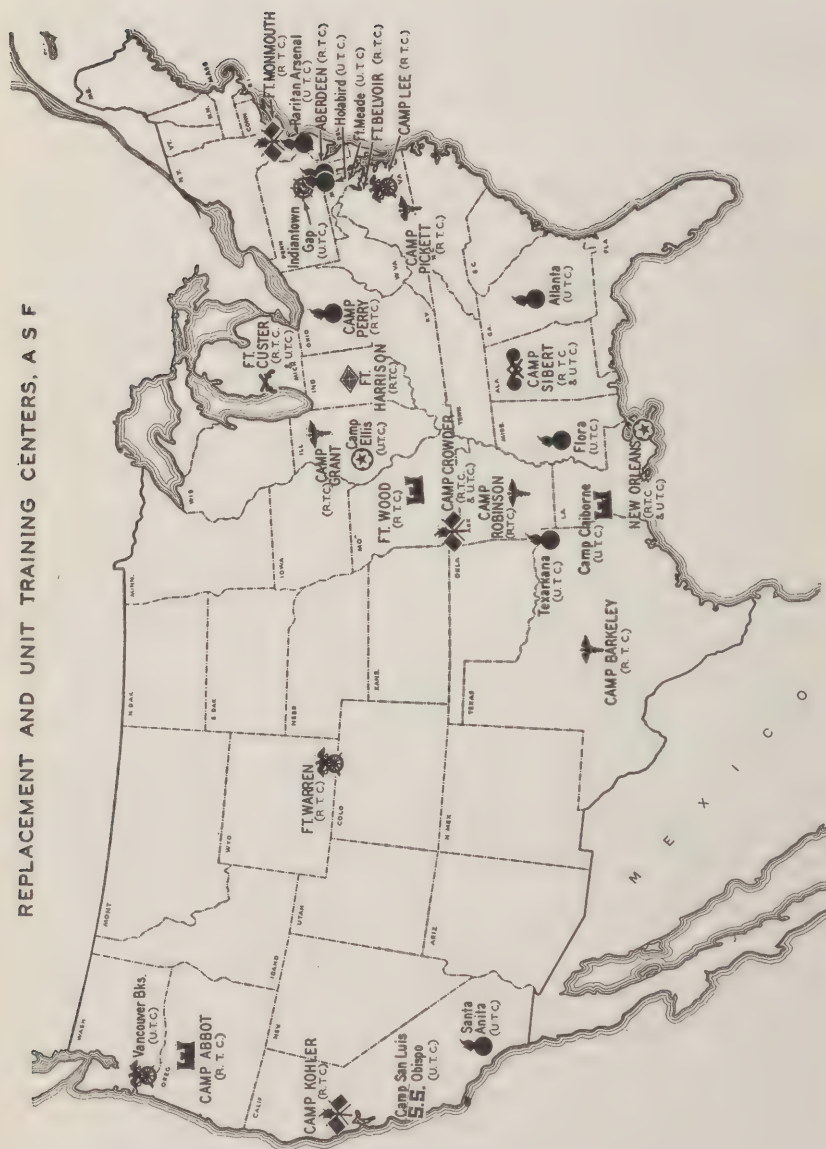
During the fiscal year 1943 over 30,000 enlisted men received training at the Ordnance Replacement Training Center at Aberdeen Proving Grounds. Trainee strength, which had been 5,800 at the beginning of the year, was 10,500 by June 30, 1943. A corresponding increase in cadre strength took place, expanding from 1,500 to 2,600 men. The two replacement training centers for Quartermaster troops at Camp Lee and Fort Warren trained 150,000 men during the year. A third Engineer Replacement Training Center was activated at Camp Abbot, Oregon, on February 1, 1943, providing a total training capacity of 25,000 men. Nearly 75,000 men were trained at Engineer Replacement Training Centers during the year.

Medical Replacement Training Centers turned out 158,000 men in the year, about twice as many as in the preceding year. A third Signal Replacement Training Center was opened on December 1, 1942, at Camp Kohler, California, bringing total training capacity to 24,000 men. The Chemical Warfare Replacement Training Center was moved from Edgewood Arsenal to Camp Sibert on July 8, 1942, and the capacity increased to 5,300. In December, 1942, the first group of enlisted men from the Army Air Forces was received at the Replacement Training Center to be trained as toxic gas handlers, decontamination equipment operators, and as chemical non-commissioned officers. A Transportation Corps Replacement Training Center was activated at New Orleans in March, 1943. The original capacity of 3,000 had to be increased temporarily to 5,000 men because of the rising needs overseas for Transportation Corps units.

The total capacity of all replacement training centers of the Army Service Forces was 153,891 men at the end of the fiscal year 1943.

At the beginning of the fiscal year 1943 a standard course of instruction was set up for all replacement training centers. Before that time instruction at these centers ranged from two to five weeks of basic military instruction and from eight to eleven weeks of technical training. Under the standard

REPLACEMENT AND UNIT TRAINING CENTERS, A S F



program, the first four weeks of training were devoted to basic military instruction and at least eight weeks to technical training. Four technical courses common to all Services were standardized at eight weeks. These were courses for motor vehicle operators, mechanics, clerks, and cooks. The result of such standardization was to provide a uniformly trained soldier in basic military subjects and in subjects common to all troops regardless of the place where he might be trained.

Men finishing the course of instruction at replacement training centers were usually assigned to specific units for further training or to specialist schools. Some were sent to Officer Candidate Schools, some went overseas, while others went to permanent installations within the United States. In April, 1943, for example, 48.2 percent of the men coming from A.S.F. replacement training centers were sent to troop units for continuation of their training. Another 21.9 percent went to specialist schools. The remaining 30 percent were sent to Officer Candidate Schools, ports of embarkation for overseas shipment, or to various installations inside the United States.

Unit Training

Enlisted men and officers assigned to newly activated or other units of the Army Service Forces devoted their time to mastering the specific functions assigned to each individual unit. The wide variety of tasks in which men had to be trained can best be indicated by enumerating some of the units prepared by the Army Service Forces for assignment to Ground and Air Forces units, overseas commands, and Army posts. These units included Special Service companies; Finance detachments; port battalions and railway-operating battalions; Chemical decontamination companies; smoke generator companies; Chemical impregnating companies; escort guard companies and Military Police battalions; Ordnance depot, ammunition and maintenance companies; Signal companies of many different kinds; Signal construction battalions, Quartermaster laundry companies, truck regiments and battalions, service companies, and salvage collecting companies; Malaria Control Units; General and station hospitals; and Engineer units of various design.

On June 30, 1943, there were 17 unit training centers operated by the Army Service Forces. Their authorized capacity was 130,520 persons.

On July 1, 1942, the Ordnance Department had a single unit training center in operation at Raritan Arsenal. During the year seven new unit training centers were activated, with capacities varying from 800 to 7,500 men. As Ordnance units were sent overseas and as Army Ground Forces expanded its training, the pressure upon Ordnance Unit Training Centers was lessened. One center was inactivated and other consolidations were being planned at the end of the year. One example will illustrate the work done at a unit training center. Ordnance troops were required to locate at night a half-track car purposely disabled and hidden on a large reservation. They were guided only by a map and had to work in complete darkness. The car had to be located, moved, and repaired without detection by aircraft observers overhead.

Camp Claiborne, Louisiana, was the principal Engineer unit training center, training some 85 units during the year with a total strength of 38,000 soldiers. Medical units were trained throughout the United States in conjunction with post hospitals and general hospitals. A total of 803 numbered Medical units were in training during the year, including 94 general hospitals, 228 station hospitals, 36 field hospitals, 42 malaria control units, 26 malaria survey units as well as auxiliary surgical groups, medical ambulance battalions, sanitary companies and other units.

The Signal Corps had a single unit training center at Camp Crowder for army, corps, and theater troops. This center was set up on August 31, 1942, with a capacity of 5,600 troops to train units in wire and radio installation and operation. Other special units of Signal Corps were trained at many different places. Some 73 Chemical Warfare Service units were trained at Camp Sibert during the year. A Transportation Corps unit training center was established at Indiantown Gap Military Reservation in July, 1942, with a capacity of nearly 7,000 troops.

During the year 1943 two unit training centers for all types of Army Service Forces units were set up. One of these was set up at New Orleans in November, 1942, with a total capacity of about 11,000 troops. A new post, Camp Ellis, was set up in 1943 to have an ultimate strength of 32,000 troops. The first units were activated here in May. By concentrating ASF units alone in a single camp, it was possible to experiment with composite service troop units, and to develop cooperative activities among service troops.

Special Schools

The training establishment of the Army Service Forces included schools for officers and enlisted men which supplemented the work done at replacement training centers and unit training centers. The mission of the specialist school was to teach an individual how to perform a particular job well. In other words, the emphasis was upon individual instruction in a given technical line in order to make a person a competent member of the unit to which he might be assigned. The types of jobs performed by service troops and officers made it necessary for many single persons to have a particular ability. Frequently the men trained were assigned to Army Ground Forces or Army Air Forces units. The Army Service Forces taught them a specialty they were supposed to perform.

During the fiscal year 1943 a flexible school program was required to provide technically trained personnel in sufficiently large numbers to supply the demands of an expanding Army. At the same time it was desirable to limit construction and duplication of facilities in caring for temporary maximum loads. To accomplish this result facilities owned by the War Department were expanded to the greatest practical extent. As these expanded facilities became inadequate to train personnel in the numbers and within the time required, civil establishments were leased and contracts for training in prescribed courses were made with civil schools, factories, industrial plants, and public utilities. In the majority of cases these contracts required no addi-



Transportation troops learn to operate amphibious trucks.

tional construction and utilized both the skill of civilian technicians and facilities, buildings, and machines in productive operation. By these means the training of specialists was rapidly increased without a proportionate drain on critical raw materials.

Schools under the supervision of the Military Training Division of Headquarters, Army Service Forces, were divided into six types.

Service Schools. This type included schools operated by the Army with Army personnel as instructors. The facilities were either Army owned or leased from civilians. The capacities and numbers of these schools fluctuated as the Army increased in size. The expansion of the Army during the year 1943 caused a rapid expansion of Service Schools in order to supply technicians quickly for the various services. After the immediate demand for technically trained personnel was supplied, advanced schools, designed to improve the quality of officers and men sent to the field forces, were established.

The numbers and types of Service Schools depend upon the number of kinds of specialists required by each Technical Service. Wherever more than one branch of the Army required the same kind of specialist, schools in that specialty were combined to prevent duplication of effort. For example, the Ordnance Department operated fourteen schools, ten of them automotive, in some of which both Engineer and Quartermaster personnel were taught. Among the courses taught in the Ordnance School at Aberdeen Proving Ground were welding, machine tool operation, automotive repair, tank repair and maintenance, fire control instrument repair and maintenance, small arms repair and maintenance, and artillery repair and maintenance.

The Ordnance school graduated more than 12,000 enlisted men during the fiscal year 1943, nearly three times as many as during the previous fiscal year. The Engineer school at Fort Belvoir had a capacity of 800 enlisted men and 1100 officers at the end of the fiscal year. Other special training was provided at the University of Kentucky and at Granite City Engineering School.

The Medical Department supervised 17 specialist schools providing a wide variety of training. Enlisted men were taught to be veterinary technicians, X-ray technicians, pharmacy technicians, sanitary technicians, and meat and dairy inspectors. Special training was also provided equipment maintenance technicians. The demands for technicians were so acute that four schools conducted two classes a day, each for 8 hours. The Medical field service school provided basic and refresher training for officers and a four weeks' course for medical and field sanitary inspectors. The Army Medical School and several general hospitals provided specialist training in various fields of medicine. The Army School of Roentgenology used the facilities of the University of Tennessee Medical School. In conjunction with the Chemical Warfare Service, the Medical Department conducted a four weeks' course at Edgewood Arsenal in the treatment of Chemical Warfare casualties.

At the Eastern Signal Corps School officers and men were given instruction in radio and telephone repair and operation. The Southern Signal Corps

School at Camp Crowder gave instruction in radar operation and the operation of airborne radio equipment. The Central Signal Corps School trained technical specialists in wire and radio communication. The Western Signal Corps School trained radio suppliers and radio repair men. Signal depot schools were operated at Philadelphia, Dayton, and Lexington, Kentucky. A school for cameramen and laboratory technicians was operated at the Signal Corps Photographic Center on Long Island.

The Chemical Warfare School at Edgewood Arsenal trained officers and men from all parts of the Army in chemical identification and in protection against chemical attack. Special courses were also offered to Chemical Warfare Service officers.

The Transportation Corps established training schools in New York and California in September, 1942, to provide instruction for newly commissioned officers recruited from the transportation field. A special course in the operation of amphibious vehicles was set up at Charleston, South Carolina, in March, 1943. Railway schools were operated at Camp Claiborne and Camp Shelby.

The Cooks and Bakers Schools supervised by the Quartermaster Corps trained over 8,000 officers and 120,000 enlisted men during the year. These were men assigned from units throughout the Army to attend these courses. In addition, the Quartermaster School at Camp Lee taught officers and enlisted men a number of special subjects. During the year 6 war dog reception and training centers were opened which, by June, 1943, had trained some 5,500 dogs and 1600 men. Dogs were trained for sentry duty, trail-attack, message carrying, wire laying, and for first aid. Sledge and park dogs were trained at Camp Rimini in Montana. The schools supervised by the Corps of Chaplains, the Army Exchange Service, the Special Service Division, the Adjutant General's Department, the Finance Department, the Office of the Provost Marshal General, and the Office of the Judge Advocate General are mentioned elsewhere.

Special schools of the Army Service Forces completely under military control had a total capacity of 13,000 officers and 65,000 enlisted men at the end of the fiscal year.

Civilian Schools. In teaching various specialties to officers and enlisted men, the Army Service Forces also made extensive use of civilian schools, factories, and industrial establishments. At these places prescribed courses were conducted by civilian instructors. The purpose was the same as that at the Special Service schools under complete military control. Civilian schools were utilized to help provide the number of trained men which the Special Service schools could not provide within the required time limits. At the same time certain specialties could be taught to a very few people at civilian schools when the size of the number of students did not warrant the creation of a military Special Service school.

A large number of civilian schools was used by the Army Service Forces during the fiscal year 1943. The enrollment varied from one school where 3,300 enlisted men were taught radio operation and repair, to three officers enrolled in the California Institute of Technology. Altogether the Signal



Ordnance soldiers repair a disabled half-track under black-out paulins supported by a makeshift lean-to.

Corps made use of some 46 civilian facilities in the instruction of Signal Corps troops. Enlisted men of the Ordnance Department received instruction in small numbers from Chrysler Corporation, The White Motor Company, Chevrolet factories, and other factories and trade schools. The Medical Corps on June 30, 1943, had some 720 officers in Medical schools throughout the country. For example, officers were enrolled in special courses on tropical medicine and tropical diseases at the Tulane University School of Medicine. The Corps of Engineers made use of some 12 civilian trade schools and industrial companies in the instruction of both officers and enlisted men. The Quartermaster Corps had officers enrolled, for example, in Harvard University and with the International Business Machines Corporation. The Transportation Corps made contracts with the New York Central System, the Pennsylvania Railroad, the Atchison, Topeka and Santa Fe Railway, the Texas and New Orleans Railroad Company, and the Missouri Pacific Railroad for the training of railway operating battalions.

The peak use of civilian training facilities occurred about January 1, 1943, when nearly 30,000 officers and enlisted men were enrolled. At the end of the fiscal year the number was less than 27,000. It was expected that there would be a progressive decline in the use of civilian facilities. In general, the Special Service schools located on Army posts and other military schools were expected to be sufficient to provide training for necessary replacement personnel. Future use of civilian training facilities was expected to be confined to those having specialized in expensive equipment which it would not be economical for the Army to duplicate.

In selecting civilian schools for Army use, a special effort was made to use institutions having adequate housing and messing facilities for the soldiers stationed there. The War Department rarely paid more than 60 cents per day per man for rooms or more than \$1.15 a day when linen, janitor services, and other lodging services were provided. Where large numbers of enlisted men were enrolled, the customary allowed charge per instruction hour was 40 cents a man.

Officer Candidate Schools. A third type of school training for personnel of the Army Service Forces was provided by the officer candidate schools. There were 11 branches in the Army Service Forces having officer candidate schools—The Ordnance Department, the Quartermaster Corps, the Corps of Engineers, the Signal Corps, the Medical Administration Corps, the Chemical Warfare Service, the Adjutant General's Department, the Corps of Military Police, the Transportation Corps, the Finance Department, and the Judge Advocate General's Department. There was also created during the year Army administration officer candidate schools where personnel were trained by the Army Service Forces to take over administrative duties. Not included in this list is the officer candidate school of the Women's Army Auxiliary Corps.

In the two years since they were established, officer candidate schools of the Army Service Forces had graduated some 90,000 officers by June 30, 1943. The authorized capacity of these schools was nearly 32,000 on January 1, 1943, and 14,400 on June 30. This authorized capacity was to be further

reduced to 9,000 early in the fiscal year 1944. In accordance with War Department instructions, the period of instruction in officer candidate schools was lengthened from 13 weeks to 4 months in the spring of 1943.

The Command and General Staff School

The Army Service Forces operated but did not prescribe the curricula or doctrine of the Command and General Staff School at Fort Leavenworth. Control of these two phases of the school was retained by the War Department. The school was designed to train officers to act as general and special staff officers for Air Forces, Ground Forces and Service Forces units and installations.

The Command and General Staff School taught two principal courses, the General Staff Course and the Service Staff Course. In addition, a four weeks' course was given for staff officers of new divisions. The authorized capacities for the General Staff and Service Staff courses on January 1, 1943, were respectively 755 and 300. The capacities on June 30 were respectively 721 and 226.

United States Military Academy

As with the Command and General Staff School, control of the curricula and doctrine at the United States Military Academy was retained by the War Department. The Army Service Forces operated the school under policies announced by the Secretary of War. Graduates were commissioned as second lieutenants of the Regular Army.

The capacity of this school was 2,496. The length of the course was reduced to three years. A class of 412 graduated on January 19, 1943, and a subsequent class of 514 graduated on June 3, 1943. Both classes received additional field training at various service schools after graduation.

Training Doctrine

In imparting military doctrine—the working principles for the conduct of operations—to officers and men, the Army Service Forces made extensive use of training literature. This literature consisted largely of field manuals, technical manuals, and training circulars. The field manual enunciated doctrine, while the technical manual presented specific procedures or techniques in the performance of particular work. Training circulars were a means of bringing both field manuals and technical manuals up to date pending complete revision.

At the end of the fiscal year 1943 there were 969 field and technical manuals prepared by the Army Service Forces for use in training. Many of these manuals were extensively revised during the year, while others were completely new. In the six months from January to June, 1943, some 280 field manuals and technical manuals were approved and scheduled for printing. Manuals were written by the individual offices within Army Service Forces responsible for directing the training of troop units. All were reviewed and approved by the Military Training Division in Headquarters.

The subject content of replacement training and unit training was prescribed in mobilization training programs. During the fiscal year 1943 a general training program for the Army Service Forces was determined and published, as well as one for replacement depots. Nine replacement training programs were rewritten during the year. Twenty-one unit training programs were also prepared or revised during the year. For example, five new mobilization training programs had to be written for Transportation Corps units, such as one for the Amphibian Truck Company and another for Port Battalions and Companies. Another mobilization training program was prepared for Medical Department malaria control units, and another for Ordnance motor vehicle assembly units.

To aid in the effective conduct of training courses, the Military Training Division in Headquarters, Army Service Forces, took the leadership in preparing a new technical manual for the War Department, *Army Instruction* (TM 21-250). This handbook presented a compilation of information about the latest techniques in teaching method.

The Army Service Forces also prepared technical information to accompany all new military equipment. Instructional material went overseas with each shipment of new equipment. Material assigned to other nations, particularly to the French, was accompanied by instructional data translated into the language of the receiving country.

Training Aids

The Army Service Forces made extensive use of many types of both visual and sound training aids. Many devices were developed for the soldier to use before actual equipment was issued to him. A special sighting device made of cardboard was developed to teach the principles of sighting a rifle. A cardboard compass, practically as good as an actual compass for training purposes, was used during the year to teach location finding. This simulated compass meant a substantial savings in material. Also moulage models were used to represent war wounds in first aid and medical training.

At the end of the fiscal year there were 246 training films available for teaching ASF troop units and 247 film strips. It was found that the film strip was particularly useful for teaching in detail the sequence of an operation.

Training Ammunition

Shortages of ammunition required for training purposes during the first part of the fiscal year 1943 necessitated close control of expenditures. Monthly requirements of training ammunition to be used in the United States by all military personnel except those assigned to Army Air Forces and Army Ground Forces were estimated by the Military Training Division one month in advance. The estimates were based upon information provided by the Service Commands, the Chiefs of Technical Services, and the Adjutant General. On January 1, 1943, the Military Training Division assumed the administrative responsibility for allocating ammunition to defense commands and to overseas bases, excluding Air Forces units. The ammu-

nition supply situation so improved by the end of the fiscal year 1943 that most of the restrictions which had previously been imposed were lifted. In July, 1942, 5 million rounds of .30 caliber ball ammunition were allocated for training purposes within the Army Service Forces. In December, 1942, this allocation had increased to 14¼ million rounds. In January, 1943, allocations of this item for all purposes, including defense commands and overseas bases, totaled 36 million rounds; by June the allocation had increased to 83 million rounds.

Special Problems

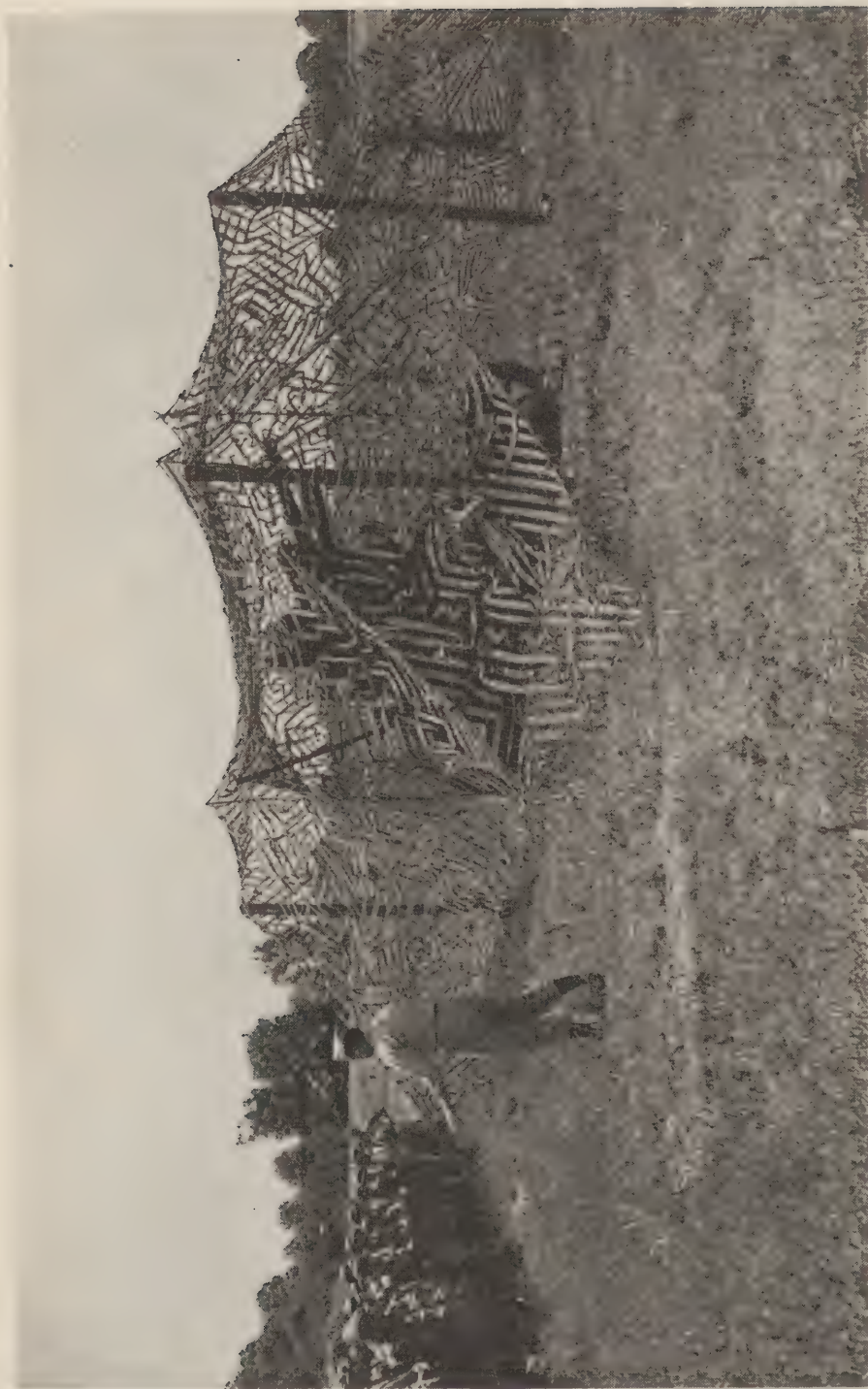
The military course of instruction in R. O. T. C. units was prescribed by the Military Training Division of Headquarters, Army Service Forces. Actual direction of training was exercised by the Service Commands, while general policies about the location of such units were handled by the Office of the Executive for Reserve and R. O. T. C. Affairs.

Close watch on the progress of units in training was maintained by Headquarters, Army Service Forces. Each unit was directed to submit a bi-weekly training status report giving full information about personnel and equipment. A master file was kept for each unit, so that progress in eliminating deficiencies could be checked. On the basis of these reports, necessary action was taken to bring units up to the strength and training level required by commitment schedules.

Reports from various battlefronts received during the year indicated the need for careful field conditioning of service units before their dispatch overseas. A major weakness of supply troops was their defense against low-flying aircraft. American flyers reported that the best defense against strafing and dive-bombing was intense fire from all available weapons, forcing the attacking planes to ineffective altitudes. The smallest weapon which proved effective for this use was the caliber .30 rifle. The pistol, sub-machine gun, and carbine had too short a range or too low a velocity to do much good. For this reason a policy was adopted whereby at least 25 percent of the enlisted personnel of service troop units were armed with the caliber .30 rifle. Heavier armament has also been provided for defense against motorized attack.

The old idea that service troops were soldiers armed with a wrench or mere drivers of trucks has not been true in this war. Courses have been given service units in combat principles, protective measures on a march in bivouac, the installation and removal of booby traps, and camouflage. Beginning in May, 1943, all soldiers trained by the Army Service Forces underwent simulated battle conditions in order to accustom them to the noise, confusion, and surprise of actual warfare. During the second 13-week period of unit training, all Army Service Forces units received instruction in street fighting and defense against airborne attack. Particular emphasis was placed upon field training. Troops were trained under field conditions, subsisting upon C, D, and K rations.

A special program was initiated in July, 1942, to provide marksmanship training to all ASF troops. Prior to the initiation of this program only 43



Ordnance troops learn how to camouflage an anti-aircraft gun and still have room in which to repair it.

percent of replacement center trainees qualified with the caliber .30 rifle. By June 30, 1943, the percentage had risen to 87 for all replacement training centers. This meant that nine out of every ten men trained by the Army Service Forces had achieved competence with a rifle.

The experience of World War I indicated that special provision must be made by the Army for training illiterates, non-English speaking men, and inept individuals. Prior to the beginning of the fiscal year 1943 the Army Service Forces established special training units at replacement and unit training centers for these individuals. Their numbers became so great, however, that as a matter of War Department policy, the intake of these people at induction stations was limited. The flow of illiterates and others to Army Service Forces training centers was fixed at a certain percentage of their capacity. A special reader and other training devices were developed for these special training units. A study made in February, 1943, at Camp Crowder indicated that 93 per cent of the men in the special training unit had been rehabilitated for service, and that 57 percent had eventually gone on to specialist training.

During the fiscal year 1943 both the Army Ground Forces and the Army Air Forces called upon the Army Service Forces to train considerable numbers of their personnel in technical subjects. An agreement on December 1, 1942, between the Commanding Generals of the Air and Service Forces provided for the allotment of quotas to the Air Forces for technical training numbering about 22,000 a month. In some months thereafter as many as 30,000 men were detailed by Air Forces to the schools of the Army Service Forces. Similarly, men were detailed by the Army Ground Forces. In July, 1942, the Ground Forces recommended that a group of enlisted men from each infantry division signal company be selected for attendance at a Signal Corps school in order to provide suitable cadres for the organization of radio intelligence platoons. Arrangements for such instruction were made at Camp Crowder.

Pre-Induction Training

The Army required large numbers of men trained in the fundamentals of radio, electricity, mechanics, and allied subjects to use, maintain, and repair the complicated apparatus of modern war. After induction, the Army provided specific training in the use of its specialized equipment, but it presupposed that many inductees brought with them a mastery of fundamentals.

It was evident during the spring of 1942 that the supply of persons with elementary training in physical science was far short of the probable need. The Army Service Forces was then assigned the responsibility on behalf of the War Department of working out with the schools of the United States a program of pre-induction training. This program was intended to provide a sufficiently high proportion of persons with the requisite knowledge of applied physical science.

It was determined that 610 Army jobs required specialized training. A basic understanding of electricity contributed to 151 jobs; shopwork to 188 jobs; machine knowledge to 226 jobs; radio training to 35 jobs; and auto-

motive mechanics to 50 jobs. These areas were defined in a series of pre-induction training manuals prepared by the Industrial Personnel Division of Army Service Forces. The manuals were designed primarily for use in the secondary schools. The cooperation of the nation's schools in such instruction was sought through the United States Office of Education. On September 30, 1942, for example, nearly 30,000 persons were enrolled in some 250 vocational schools to study radio and communications.

XI

PERSONNEL SERVICES

The size and composition of the Army was determined by the War Department General Staff. The Army Service Forces then arranged with the Selective Service Bureau of the War Manpower Commission for the number of men to be inducted each month. The actual selection of persons to serve with the Army was done by local boards within each state which operated under regulations of the Selective Service Bureau. Persons chosen by these boards were directed to report to one of some 76 induction stations operated by the Army Service Forces. At the induction stations men were given medical examinations and officially accepted into the Army.

Recruitment of volunteers for Army and Navy service ceased after the issuance of Executive Order No. 9272 on December 5, 1942. Thereafter the War Department and the Navy Department agreed to make joint use of induction station facilities for examining and accepting men chosen by local selective service boards.

From an induction station, men designed for Army service were sent to a reception center operated by the Army Service Forces. During the fiscal year 1943 a two-weeks furlough usually intervened between the date of induction and the date of reporting to a reception center. At reception centers men were clothed, inoculated against contagious disease, classified, began military training, and were assigned to various branches of the Army. The stay at the reception center might last from three or four days to two weeks.

The size of the job performed by the Army Service Forces in inducting and receiving men can be measured by the expansion of the Army during the fiscal year 1943. On July 1, 1942, there were 2,800,000 enlisted men in the Army of the United States. By June 30, 1943, this number had increased to 6,500,000. In other words, in one year the enlisted strength more than doubled, and over 3,500,000 men entered the Army.

It was important to the Army that all men who were inducted be capable of learning quickly the new duties to be assigned them. At the time of the medical examination in the induction center every person was briefly interviewed by a special officer. If there was any doubt about a man's literacy, he was given a literacy test—the Army Information Sheet. Those who failed this test were given the Visual Classification Test, conducted by the use of large wall charts and pantomime. Men who failed this last test were not accepted for induction.

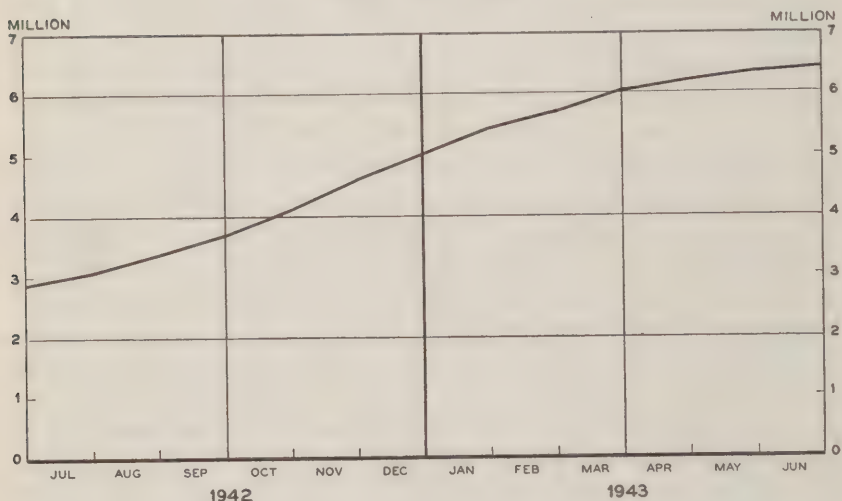
At the reception center every man was given the general classification test. On the basis of grades scored in this test, men were classified into five groups indicating the probable speed and ease with which they could learn. Those persons who could not read and write English were also given the Mechanical Aptitude Test at the reception center. This test was designed to measure an individual's ability to learn mechanical duties. A special aptitude test for

radio-telegraph operator was given to those men whose experience or interest indicated some capacity in this field.

Certain soldiers might be given still additional tests at replacement training or unit training centers. A special battery of examinations for combat intelligence work was given to selected men. Educational achievement tests were also used to select men for certain service schools and for the Army Specialized Training Program. Special tests were sometimes used to select persons to do mechanical, skilled, or clerical work.

All tests used by the Army were developed in The Adjutant General's Office of Headquarters, Army Service Forces. The tests themselves were subjected to careful checking and preliminary experimental use before they were finally given to enlisted men. Standard tests like the General Classification Test were revised when necessary.

CHART 41
U S ARMY ENLISTED STRENGTH
FISCAL YEAR 1943



During the fiscal year 1943 a number of studies were made to determine how accurately test results reflected actual experience. Studies were made of the graduates of various courses in order to determine the correlation between their course record and their grades on classification tests. One such study was made at Fort Sill of graduates of an electrical communications course. It was found that almost all the men in the course who scored group I (Superior) results in the General Classification Test received an average or better final grade in the communications course. On the other hand all but a minute percentage of those who scored in group V (Inferior) received less than average grades in the communications course.

Another study was made of graduates of two clerical courses given at an Ordnance Department Arsenal school. Here it was found that over 85 per-

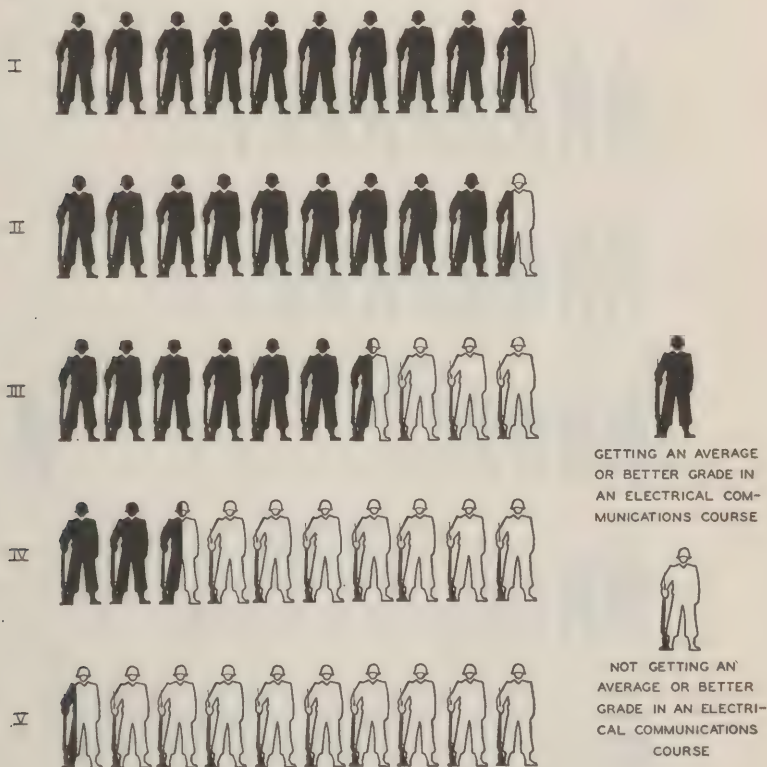
cent of the men who scored in group I (Superior) in the Clerical Aptitude Test received an average or better grade in the clerical course. Less than 10 percent of those scoring in group V (Inferior) on the Clerical Aptitude Test received an average or better grade in the clerical course.

A third study was made of some 5,000 persons attending 14 officer candi-

CHART 42

CORRELATION BETWEEN GENERAL CLASSIFICATION TEST RESULTS AND GRADES IN AN ELECTRICAL COMMUNICATIONS COURSE

RATING IN GENERAL
CLASSIFICATION
TEST



date schools. It was found that the higher the grade a man received on the General Classification Test the better were his chances of finishing the course satisfactorily and receiving his commission. More than 90 percent of the men who scored 140 or over in the General Classification Test received their commissions. On the other hand, not quite 50 percent of the men who scored under 110 (the dividing line between group II and III in the General Classification Test) received commissions.

Classification and Assignment

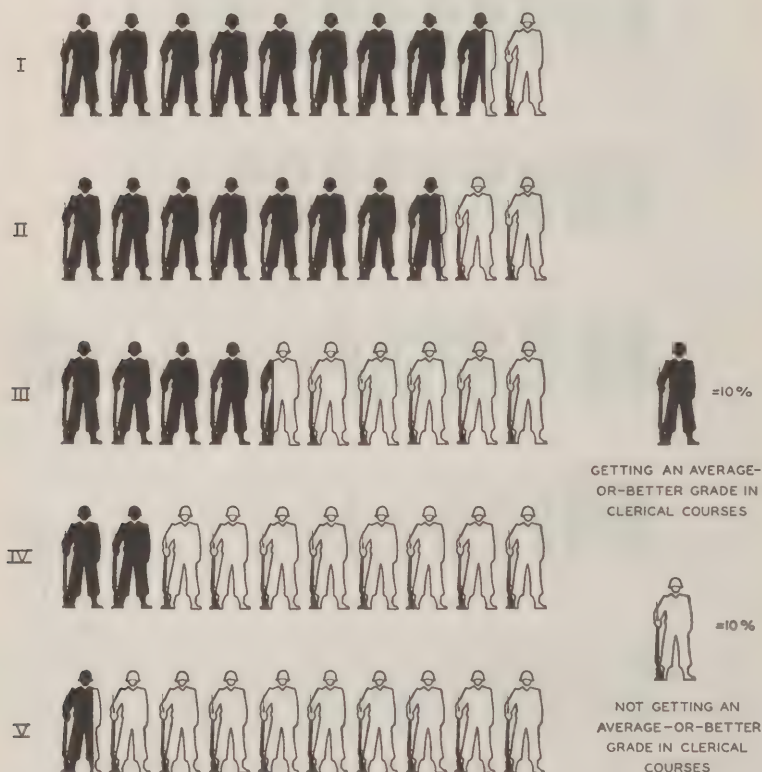
The general classification test given at the Reception Center was intended to indicate a person's general capacity to learn in order to guide the Army in training him. It was not the primary basis for determining a man's field of potential usefulness to the Army.

The classification procedure of the Army began at the reception center,

CHART 43

CORRELATION OF CLERICAL APTITUDE TEST RESULTS AND GRADES IN CLERICAL COURSES

RESULTS OF
CLERICAL APTITUDE
TESTS

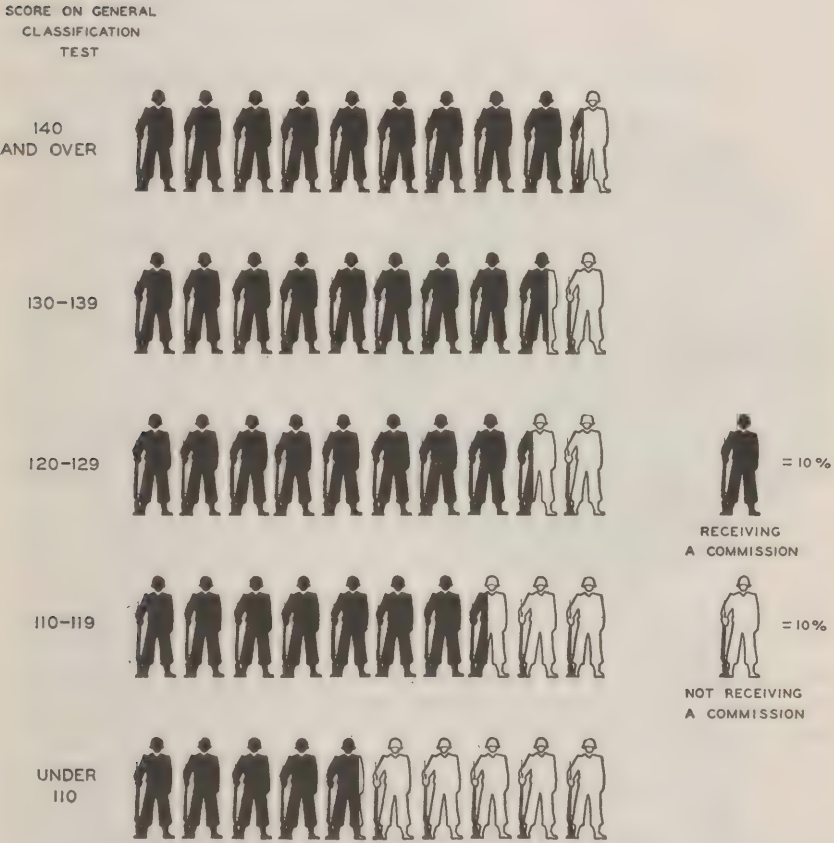


where the incoming enlisted man was interviewed by specially trained personnel of the Army Service Forces. The interviewer filled out the Soldier's Qualification Card, a basic document containing a summary of his personal history, schooling, occupational experience, test scores, military experience, and demonstrated ability as a leader. A list of job requirements in the Army for which civilian training and experience might particularly fit a man was published in Army Regulations 615-26.

On the basis of the interview, plus the test scores, enlisted men were assigned to the Air Forces, the Ground Forces, or to the Service Forces for training. Assignments necessarily had to be made to the branch of service and the type of work where men were needed by the Army. Assignment demands, or requisitions for personnel, were collected in Headquarters, Army

CHART 44

CORRELATION BETWEEN GENERAL CLASSIFICATION TEST RESULTS
AND SUCCESS AT OFFICER CANDIDATE SCHOOLS



Service Forces, and sent out to each reception center every month. Insofar as possible, assignments were made in accordance with a person's previous experience and aptitude.

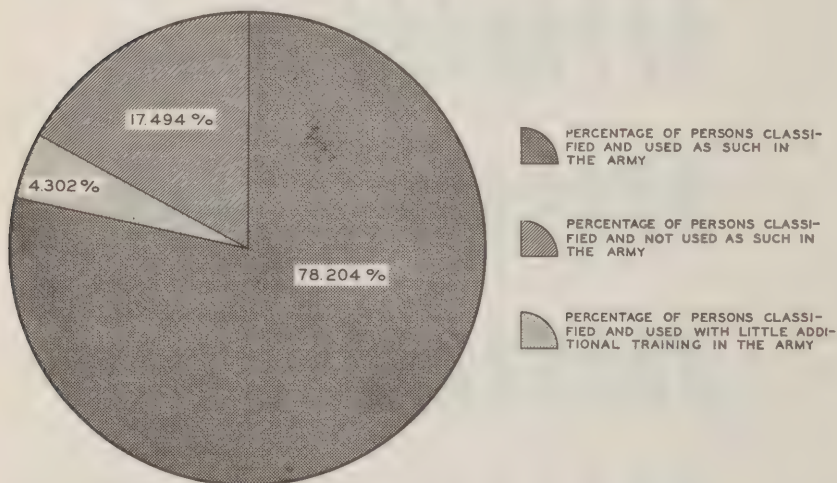
Once a man was sent to a Replacement Training Center or other training unit, the classification job did not end. New assignments might be made within the Air Forces, Ground Forces, or Service Forces. Transfers between the commands also took place.

The Adjutant General's Office in Headquarters, Army Service Forces, kept

central personnel records for every man in the Army, showing basic data, classification, and assignment. These records too were used to find special qualifications among Army personnel as they were needed.

A sample survey made during the fiscal year 1943 showed that of enlisted men having a civilian occupational specialty—the job list of civilian skills useful to the Army—a little over 78 percent were being used in a similar or related capacity by the Army. Another 4 percent were being used by the Army with little or no additional training. Only some 17 percent of the enlisted men studied who had occupational specialist backgrounds were being used by the Army in some activity different from previous civilian experience.

CHART 45
UTILIZATION OF
CIVILIAN OCCUPATIONAL SPECIALISTS IN THE ARMY



The civilian occupational specialties of use to the Army included a wide range of jobs, from aerial photographer, meat cutter, gunsmith, and locomotive mechanic to geologist, powerhouse engineer, geographer, and agricultural engineer.

Reserve Officers Training Corps Assignments

During the fiscal year 1942 it became evident that the existing organization of the Reserve Officers Training Corps was not providing sufficient reserve officers for certain branches of the Army, notably, the Corps of Engineers, the Air Corps, the Quartermaster Corps, the Signal Corps, and the Chemical Warfare Service. Under peacetime conditions R.O.T.C. units set up at colleges and universities had been primarily Infantry training units, with a sprinkling of Cavalry, Field Artillery, and Coast Artillery units. Upon successful completion of the training, graduates had received reserve commissions as second lieutenants in these branches. The result was that many qualified engineers whose special knowledge was badly needed in wartime by

the Signal Corps, Air Corps, and others were not commissioned in these branches.

In 1942 a special effort was made to commission graduates of the Reserve Officers Training Corps with the requisite educational qualifications in an arm or service other than the one in which they had been trained.

This same effort was repeated on a more systematic basis in the fiscal year 1943. On October 5, 1942, commanding generals of the nine Service Commands were directed to obtain transcripts of the college record of senior R.O.T.C. students within 15 days after the close of the first semester of the 1942-1943 academic year. These records were then sent to the Military Personnel Division in Headquarters, Army Service Forces. The needs for officers with special technical qualifications were obtained from Army Air Forces, Army Ground Forces, and component parts of Army Service Forces. Available personnel was then allotted among these needs. Instructions were sent out to Service Commands to assign particular individuals graduating in June, 1943, to Officer Candidate Schools of other branches than those of the branch in which they had been trained while in college. In this way special technical abilities were obtained for branches that did not ordinarily receive reserve officers through the R.O.T.C.

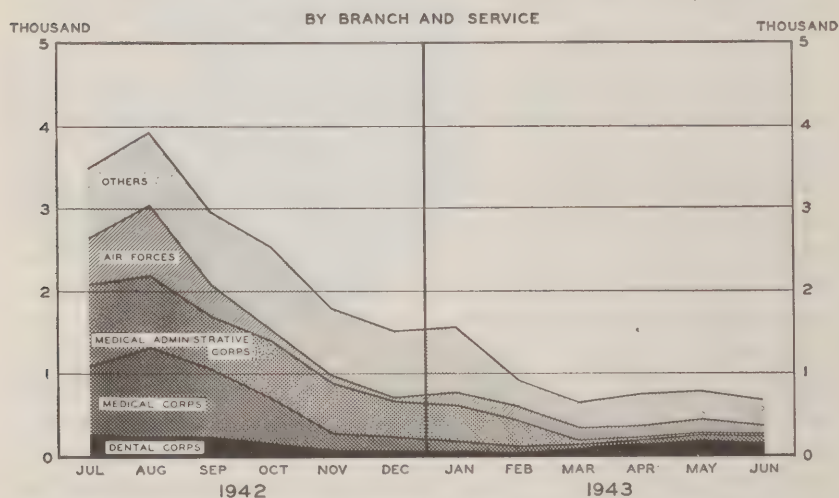
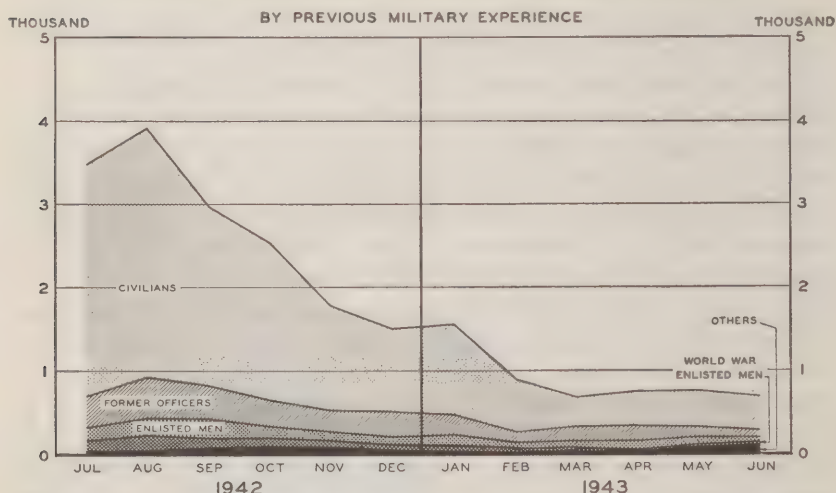
OFFICER PROCUREMENT SERVICE

Soon after its creation in March, 1942, the Army Service Forces made a careful study of the problem of commissioning officers from civilian life. There was considerable dissatisfaction both within and without the Army with existing procedures. Individuals applying for commissions were required to fill out applications in the various branches which might be interested in a man's qualifications. Some individuals were filling out and filing application forms in as many as twelve places. From the point of view of the commissioning arms and services of the Army, the process was time-consuming and wasteful. There were also public fears that selections were not based solely upon merit but that chance played a large part in obtaining commissions. A new organization and plan for commissioning civilians was put into effect in July, 1942.

Officer requirements in war time by the Army of the United States were of two kinds. One need was for officers whose military experience, training, and qualities of leadership were more important than their previous civilian and technical training and experience. The greatly increased requirements for officers in this category were met mainly from reserve officers and from graduates of officer candidate schools. The second need was for officers whose civilian and technical training and experience were more important than their military background and qualities of military leadership. These officers were needed for positions encompassing special, technical, or administrative duties where military indoctrination was unnecessary or could be imparted by a short period of training. The requirements for officers of such special technical capacity were met by appointments from civil life. For example, the Army's needs for doctors, for engineers, for communications experts, for

CHART 46

TEMPORARY APPOINTMENTS IN THE ARMY OF THE UNITED STATES AVERAGE NUMBER WEEKLY (EXCLUDING OFFICER CANDIDATE SCHOOL GRADUATES)



transportation officers, for production men, and other similar specialties were met principally by commissioning from civilian life.

A central Officer Procurement Division was created in The Adjutant General's Office in June, 1942. All branches of the Army were instructed at that time to requisition their officer needs from civilian life from this Division. In turn the Service Commands of the Army Service Forces set up local offices in Service Command Headquarters and other key cities where individuals might file applications centrally for consideration by any branch of the Army needing men with particular qualifications.

A separate Officer Procurement Service was created by War Department Circular No. 367 on November 7, 1942, under the Army Service Forces. Its

personnel was obtained from the Officer Procurement Branch of The Adjutant General's Office and from the recently abolished Army Specialist Corps. The Service was authorized to deal directly with the Commanding Generals, Army Ground Forces and Army Air Forces, with the Chiefs of Technical Services and staff divisions of Army Service Forces, and with the Secretary of War's Personnel Board in all matters pertaining to the procurement and appointment of officers. The creation of the new service did not result in any material change in procedure.

The task of the Officer Procurement Service proved to be greater than that of its two predecessors. In 1942 approximately 104,000 officers were appointed from civil life, of whom not more than 10 percent were procured and processed by the Officer Procurement Branch of The Adjutant General's Office and the Army Specialist Corps. The remainder was procured directly by the interested services. The total was broken down as follows—50,000 for the Medical, Dental, and Veterinary Corps; 20,000 for the Army Air Forces; 3,000 Chaplains; 2,000 for the Army Ground Forces; 26,500 for the Army Service Forces; and 2,500 others.

From the date of its establishment to June 30, 1943, the Officer Procurement Service received 27,500 appointment requests from using agencies and submitted 24,200 to the Secretary of War's Personnel Board, which approved 23,000 of them.

The accompanying charts show the trend of temporary appointments in the Army of the United States during the fiscal year 1943.

THE WOMEN'S ARMY AUXILIARY CORPS

On July 1, 1942, the Women's Army Auxiliary Corps was just beginning. The Office of the Director had been created within the Army Service Forces, recruiting was just getting under way, and plans had been made for WAAC training. During the year the Corps grew to a total of 65,000 members—4,800 officers and 60,200 auxiliaries.

The President originally authorized a strength of 25,000 for the Women's Army Auxiliary Corps. On November 20, 1942, however, he raised the figure to the limit permitted by law—150,000.

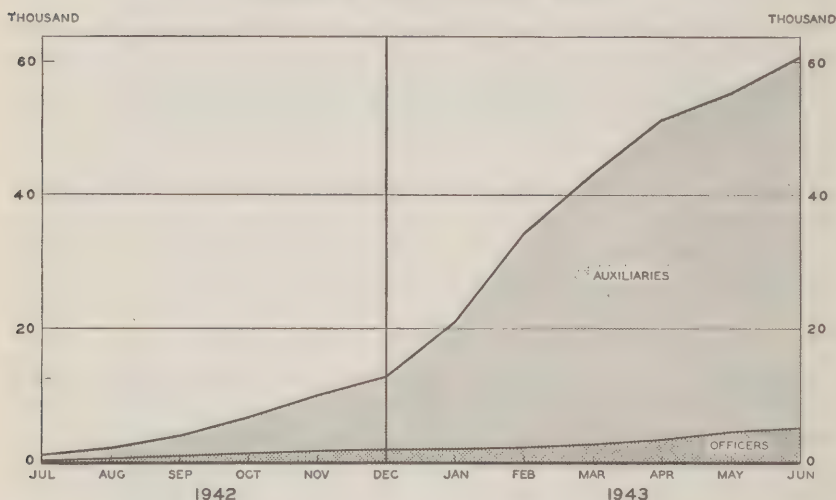
The function of the Corps was to take over duties that kept soldiers behind desks, typewriters, message centers, supply counters, steering wheels, and telephone switchboards; women were expected to assume these and many similar positions. These were not jobs which civilian personnel could fill, since they had to be performed under military authority and discipline. Any non-combatant group attached to an Army unit had to be as mobile as that unit, with the same supply line, the same easily identified uniform, and work the same hours.

While at first it had been expected that the Corps would number 12,000 women by December 31, 1942, on that date the Corps actually had a strength of 21,000. An intensive recruitment campaign then began to reach the 150,000 maximum permitted strength. This campaign was directed by the Office of the Director of the Women's Army Auxiliary Corps, and carried out by the Service Commands. A new advertising contract was let to inform

the public about the important work of the WAAC and to encourage enlistment. Test canvass of one city was made in an effort to gain recruits by a door-to-door campaign. A recruiting film was made in Hollywood, by the Signal Corps, and another film was sponsored by the Special Service Division for showing to all Army personnel.

The stated policy of the WAAC was to refrain from direct recruitment of women in essential war industries or in agricultural occupations. After November, 1942, employees of any Federal agency were refused enrollment unless they presented a written release. No applicant was accepted upon whom anyone was dependent for financial support unless such support could

CHART 47
TOTAL ACTIVE DUTY WAAC STRENGTH
OFFICERS AND AUXILIARIES



be met entirely by means other than that derived from her pay as a member of the WAAC. After December 1, 1942, mothers of children under 14 were barred from enrollment.

In May, 1943, special recruitment was begun for Signal Corps training. Interested personnel were enrolled in the WAAC, placed on inactive duty status while, as civil service employees, they took a 3 to 6 months' course given by the Signal Corps. At the completion of that course, they were called to active duty for 4 weeks of basic training, and then were ordered to the Signal Corps for duty.

For a time in the winter of 1942-43 recruitment was slowed down by a lack of clothing for newly enrolled members. At the time when the Corps was founded, there were no size tariffs to guide the Quartermaster Corps in ordering uniforms. The experience of American coat and suit manufacturers was of uncertain usefulness as a guide, because no data had been kept about age distribution of purchasers. Accordingly, it was decided to take British and Canadian experience in outfitting women components as the guide in

ordering WAAC uniforms. It turned out that the Quartermaster procured more larger sizes than were immediately needed and not enough small sizes. More small sizes were ordered and a size number 10 added. By the end of the fiscal year the uniform situation was about normal.

Despite intensive efforts, the recruitment of members into the WAAC during the last five months of the fiscal year was substantially below the objectives set on January 1. The problem of finding members for the Corps was the foremost concern at the end of the year.

Training

On July 20, 1942, the first WAAC training center was opened at Fort Des Moines, Iowa, with a four weeks' basic training course for auxiliaries and a six weeks' course for officer candidates. The classes were designed to orient and indoctrinate women in military procedure, customs, and courtesies. In addition, military sanitation, map reading, and defense against chemical and air attack were taught. Officer candidates were given training courses in property accountability, leadership, mess management, and company administration. Close order drill and physical training were included for both officer candidates and auxiliaries.

A second WAAC training center was activated at Daytona Beach, Florida, on October 24, 1942. Other centers were established at Fort Oglethorpe, Georgia, on February 1, 1943; at Fort Devens, Massachusetts, February 18, 1943; and at Ruston, Louisiana, on March 3, 1943. Seven Administrative Specialist Schools were opened under the supervision of The Adjutant General's Office to train members of the WAAC in Army Administration. WAAC officers served as assistant directors, as company commanders and officers, and as assistant adjutants at each school. They were located at Stephen F. Austin State Teachers' College, Nacagdoches, Texas; Texas State College for Women, Denton, Texas; East Texas State Teachers' College, Commerce, Texas; Sul-Ross State Teachers' College, Alpine, Texas; Arkansas Polytechnic College, Russellville, Arkansas; Arkansas State Teachers' College, Conway, Arkansas; and East Kentucky State Teachers' College, Richmond, Ky.

The first group of auxiliaries completed basic training on August 15, 1942. Some received immediate assignments to work at the Training Center. Others began further training in advanced courses in administration, motor transportation, and cooking and baking. On August 29 the first officer candidate class of 436 women was graduated. They were commissioned as Third Officers of the WAAC. They then received two additional weeks of practical training for the types of duties they were to assume. Training periods for auxiliaries and officer candidates ended almost each week thereafter.

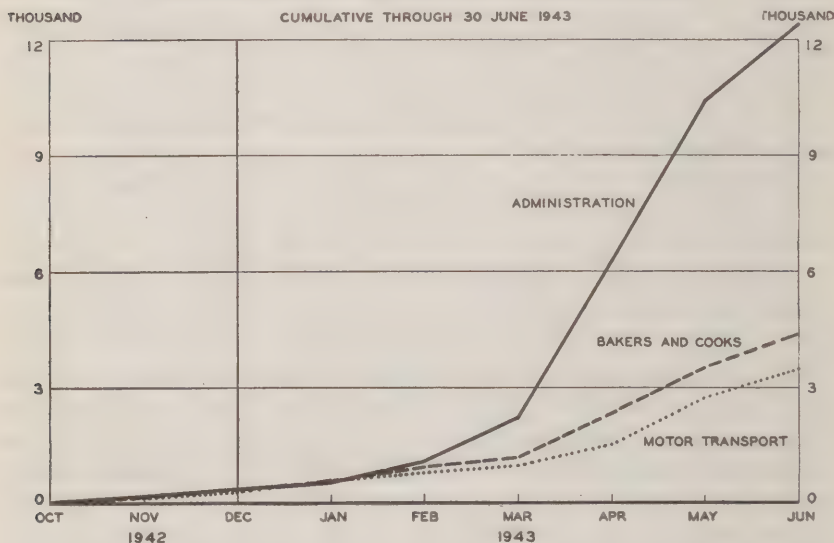
Upon completion of their basic training, a number of WAAC Third Officers in October, 1942, were sent to the Adjutant General's School at Fort Washington, Maryland; the Quartermaster School at Camp Lee and the Holabird Motor Base for advanced training in courses they would later teach. Sixteen WAAC officers entered the Command and General Staff School on February 3 to attend the Army Service Forces courses. Another 16 officers attended the

course beginning in April. Other WAAC officers attended the Special Service School, the Chemical Warfare School, the Army Exchange School, and the Inspector General's School. A special recruiting school for officers was set up at Fort Des Moines.

Special training of auxiliaries was increasingly taken over by WAAC officers as they completed their own work at various schools. Training of photographic laboratory technicians at Lowry Field, Colorado, for service with the Army Air Forces began on January 30, 1943. A few members of the Corps were sent to the Army Band School at Fort Myer to become WAAC band leaders. At the end of the year the training program for auxiliaries, in addition to basic training, included a bakers and cooks course, motor transport

CHART 48

WAACS COMPLETING WAAC SPECIALIST SCHOOL TRAINING



course, administrative specialist courses, radio repairmen course, radio operator course, I.B. machine course, code clerk school, photo lab technician course, Army music school course, recruiting course, and officer candidate school.

Since there was no existing reserve from which to draw an officer nucleus at the inception of the program, the Women's Army Auxiliary Corps initially trained officer candidates carefully selected for that training. About 1,300 women were chosen for this program out of 30,000 applications. The successful applicants were picked on the basis of comparative skill, training and experience.

Once a group of trained officers had been obtained, the Corps adopted the policy of commissioning only from the ranks of auxiliaries. All prospective officers were required to have four weeks of basic training, after which they might be sent to officer candidate schools for a six weeks course of study. The right to apply for officer candidate school was open to all enrolled personnel. Applicants had to have a score of 110 or higher in the Army General

Classification Test. They were sifted by a special interview given by a board of WAAC officers. Beginning in March, 1943, women of outstanding qualifications were permitted to enroll specifically for attendance at an officer candidate school following completion of basic training. Although the upper age limit was 45 years, women earmarked for officer training were enrolled up to the age of 50.

All WAAC training was directed by the Service Commands under the guidance of policies and doctrine determined by the Office of the Director, Women's Army Auxiliary Corps.

Assignments

The members of the Women's Army Auxiliary Corps were expected to serve with the Army within the United States and overseas—in short, wherever they might release men from non-combatant duties. It was adopted as the policy of the Corps to assign units and individuals in the following priority:

1. Fixed installations
 - a. in the continental United States
 - b. in theaters of operations
2. Mobile units in the continental United States
3. Mobile units in theaters of operations

At the end of April, 1943, the system of forming WAAC companies according to Tables of Organization was discontinued, except to meet specific requests, by Army Air Forces and overseas theaters, where a number of companies of identical organization was needed. All other WAAC personnel was thereafter assigned on an allotment basis.

Of the 628 specialist jobs in which the Army could make use of civilian skills and training, some 400 were determined to be suitable for women at non-combatant posts. There were 142 jobs that were labelled WAAC specialists, for which men were not to be considered available. These were jobs which women could perform as well as or better than men, as set forth in A.G.O. Memorandum No. W635-3-43, 31 March, 1943. Number 1 priority was given to recruiting and training for these tasks.

WAAC personnel might be used for civil service type jobs when it was not practical to obtain civilian employees.

Units and individuals of the Corps were not assigned to Army Ground Forces units below the level of Army or Defense Command headquarters.

Of the projected 150,000 strength, it was expected that 71,000 members of the WAAC would be assigned to the Army Service Forces, 65,500 to Army Air Forces, 5,000 overseas, and the remainder to Army Ground Forces and reserve.

The strength of the Corps was included in the troop basis plans of the War Department. This meant that the War Department General Staff in determining the total military personnel requirements of the Army drew no distinction between male and female composition. The number of WAACs serving with the Army at any one time lowered the number of men needed to reach the total required strength.

The first assignments of WAAC officers were made in September, 1942, as staff and faculty officers at the Fort Des Moines Training Center, as recruiting officers, and as officer cadres for future units. A WAAC officer was assigned to each Service Command headquarters in October. Two post headquarters companies arriving at Fort Huachuca, Arizona, on December 2, 1942, were the first to go into the field. Both of these were negro companies. Five WAAC officers arrived in England on November 30. A third headquarters company arrived at Fort Sam Houston on December 17. From that time on companies and groups of WAACs went steadily from training centers to Army posts and installations.

A WAAC company of five officers and 192 auxiliaries arrived at Allied Headquarters in North Africa on January 27, 1943. They took over such jobs as switch-board operators and motor drivers. Many members of the company spoke French.

Early in 1943 the Army Air Forces began to replace WAACs on aircraft warning service with civilian volunteers. The women were then used for more specialized duties.

A WAAC officer arrived in the European Theater of Operations on April 14, 1943, to serve as WAAC staff director there. That same month another officer became staff director in the headquarters of the Commanding General of the Army Air Forces.

In addition to supervising the recruitment, training, and assignment of members, the Director of the Women's Army Auxiliary Corps was responsible for advising the War Department about the welfare and morale of the Corps. Special courses of instruction and special recreational services were prepared and offered during the year.

An Act of Congress approved on October 26, 1942, equalized the rates of pay for the Army and the WAAC. During the fiscal year legislation was introduced into Congress making the WAAC a regular component of the Army of the United States with the designation of Women's Army Corps. The strength of the Corps was to be authorized by the President from time to time. The age limit was set at from 20 to 50 years. This measure passed both houses and was signed by the President on July 1, 1943. The Women's Army Auxiliary Corps was to become officially the Women's Army Corps on September 1, 1943.

THE ARMY SPECIALIZED TRAINING PROGRAM

By act of Congress approved November 13, 1942, the age limit at which men became subject to selective service for the defense of the nation was lowered from 20 to 18 years. One result of this action was to make it possible to bring most college students of the nation immediately into the Armed forces. Necessarily this made it imperative for the War Department to assess its existing and future needs for college trained personnel and to determine the desirable educational program to meet these needs.

Prior to November 13, 1942, the War Department had offered enrollment in the Army Enlisted Reserve to men finishing their college course at the time they became subject to selective service.

By the time they had reached the age of 20, most young college men had received sufficient education to enable the Army to use their service to good advantage. Only a relatively small number of students preparing for medicine, dentistry, or engineering were retained in a reserve status for any appreciable length of time. By joining the Enlisted Reserve, however, students were assured that their college courses would not be interrupted without full consideration to the end of semesters, final examinations, and other details of orderly termination.

On December 17, 1942, a joint statement was made by the Secretary of War and the Secretary of the Navy announcing that the two departments intended to make use of college educational facilities in order to train certain members of the armed forces in specialized fields indispensable to the Army and the Navy. Administration of the War Department program was assigned to the Army Service Forces. By Circular No. 95, Headquarters, A.S.F., on December 18, 1942, a new staff division was created, the Army Specialized Training Division. Actual operation of the program was given to the Service Commands, guided by the policies determined at headquarters.

In formulating its plans, the Army had the benefit of consultation with many educators, particularly with the staff of the War Manpower Commission, the Office of Education, and a committee of the American Council on Education. It was recognized that for the time being the program would curtail liberal education in the United States, since its emphasis was on technical training. But in the words of the Secretary of War, "the immediate necessity is to win this war and unless we do that there is no hope for liberal education in this country."

Curriculum

The Army Specialized Training Program was a long range program, calling for the training of 150,000 young soldiers each year. The principal fields of study were engineering, medicine, mathematics, and science, with a smaller quota for personnel psychology and foreign language and area study. The precise number of men to be trained in each field was based upon requirements presented by the Air, Ground, and Service Forces of the Army. Of necessity the number fluctuated with changes in demand.

The program was divided into terms of 12 weeks each, with an interval of one week between each term. The number of terms varied with each course. There were three 12-week terms (roughly 9 calendar months) in the basic phase, which covered work that started at the college freshman level and carried the student through the first half of the sophomore level. After completing the basic phase, students were eligible to enter the advanced phase, covering academic work beginning at the second half of the sophomore year. It was expected that the soldier would move from term to term until the completion of his course. Trainees were subject to call to other active duty, however, at all times. The length of the advanced phase depended upon the nature of the course. For example, it took 18 months to train an engineer and 51 months to train a doctor.

The basic phase included some work in history, geography, English, mathe-

matics, physics, and chemistry. The curriculum was determined by the Army Service Forces, although it might be adapted within general limits to fit the facilities of the college participating in the program. Each trainee was required to devote 24 hours a week to classroom work and an equal amount of time to supervised study. While in the classroom, the soldier-student was wholly under the direction of a civilian instructor. At the end of each 12 weeks' term, he had to pass certain examinations. Should he fall below established averages and have no valid excuse, he was disqualified from further participation. Only a small part of the training, the definitely military part, was handled directly by the Army.

The medical program was the most elaborate of all. The pre-medical program ran five terms, or 64 weeks of elapsed time, compared with the three-term basic technical program. The curriculum called for the following work, translated into semester hours.

Mathematics	8
Physics	8
Chemistry	18
Zoology	12
History, English or Geography	15
Other Selected Subjects	25

Total 86

The medical curriculum for the advanced phase was unchanged, each school continuing to establish its own curriculum. In this advanced phase, military training was reduced to one hour per week and physical conditioning was left to the men to work out for themselves. Upon graduation, men were to be commissioned as First Lieutenants in the Medical Corps and placed upon inactive status so they might complete a year of internship.

Since all of the academic work in the program was at the college level, it was expected that credits toward degrees would be granted. The Advisory Committee on the Army Specialized Training Program, composed of presidents of a number of leading colleges and universities, recommended the authorization of such credits. Colleges and universities participating in the program might arrange for soldiers returning after the war to qualify for degrees, by taking special courses designed to "round out" their education.

Classes were started in three cycles, four and five weeks apart. All classes in a given cycle ran concurrently and all classes at any one college were in the same cycle. The first cycle of instruction started on April 12, the second on May 10, and the third on June 14. The first term of the first cycle would end on July 3, and the second term would start a week later. Thereafter a new term would begin every month in one of the cycles, and a term would be completed in another cycle, allowing for a regular monthly inflow of trainees and a continuous output of trained men later on.

In the basic phase, the soldiers arose at 6:30 and from then until taps at 10:30 their day was as rigorous as that of troops in training. In addition to the classroom work, they received six hours a week of supervised physical

conditioning and about five hours a week of military instruction consisting of lectures, orientation work, morning formation, and drill. The men were off duty from late afternoon on Saturday until the Sunday evening meal.

The students were encouraged to take part in competitive team sports within their unit, although they had no time to train for or to participate in any intercollegiate sports competition. During the first four weeks of a term, the student was subject to general physical conditioning and testing. After this, the men were assigned to those activities in which further development was desired. By the end of the term, each man had participated in aquatics, combative sports, gymnastics, and team sports.

The cadet system was employed in the program. Trainees were organized into companies, battalions, and regiments, the companies consisting of approximately 250 men. Within the units students served as platoon sergeants, platoon leaders, and officers. Each man kept a position long enough to familiarize himself with the duties involved.

All soldiers assigned to the basic phase received the grade and pay of privates, grade 7. A soldier assigned to the advanced phase of the program retained the grade and pay he held at the time of his assignment to specialized training.

Selection of Students

It was recognized at the very start that the success of the Army Specialized Training Program would depend in large part upon the quality of the soldiers chosen to participate. Therefore, every effort was made to set high standards and put the applicant through an elaborate screening process designed to eliminate the unfit. To be eligible for the program, a soldier must have scored 115 or more in the Army General Classification Test. Soldiers under 22 years of age must have had at least a high school education or its equivalent. Those with more than two years of college must also have had at least one year of college physics, or mathematics, or three college courses in psychology, or must have some knowledge of at least one modern foreign language. Soldiers 22 years of age or over must have had at least one year of college but not more than three years of college, unless they had majored in one of the following: mathematics, physics, chemistry, psychology, or engineering, or unless they had some knowledge of at least one foreign language. Soldiers in the following categories were ineligible regardless of other qualifications: men in units alerted for overseas, men destined for immediate shipment as overseas replacements, men who had qualified for Aviation Cadet Training, selected officer candidates, volunteer officer candidates unless they signed waivers of their rights to request relief from active duty, and accepted officer candidates unless they had expressed a preference for the ASTP after acceptance for an officer candidate school.

Any soldier in the Army who met the requirements, and was not disqualified by reason of assignment to one of the above categories, was eligible for specialized training. Field boards were established to conduct personal interviews in order to establish the general qualifications of personnel for

selection. A special personal data and interview form was filled out by the soldier for the board's guidance.

All enlisted men reporting at reception centers who attained a score of 115 or better on the Army General Classification Test who were members of the Enlisted Reserve were transferred to a replacement training center for their basic training, but they were automatically considered candidates for specialized training. This measure was taken to facilitate the transition from the Enlisted Reserve system to the specialized training program. All men obtaining a GCT score of 115 or better who received a qualifying score on the pre-induction test given to over 300,000 high school students on April 2, 1943, were similarly designated as ASTP candidates.

All men had to complete basic military training before they were assigned to specialized training. A few weeks before the completion of their training, those who had obtained 115 or better on the GCT appeared before the ASTP field selection board at their station for selection or rejection in accordance with the requirements. Those who were found generally qualified were sent, at the completion of basic training, to a Specialized Training and Reassignment Unit, known as a STAR unit. A STAR Selection Board, operating at each STAR Unit, interviewed the soldier, administered tests, and determined the specific assignment of soldiers found qualified for the ASTP. Approximately 85% of the men sent to STAR Units were found qualified. All candidates were required to take a special Army Specialized Training Test, prepared by The Adjutant General's Department, and also the American Council on Education Psychological Examination for College Freshman. Special tests were then given for specific programs. The results of this test largely determined the level of the basic or advanced phase for which a soldier was eligible. At the conclusion of the testing procedure, and after a tentative assignment had been made, the soldier was given a personal interview, at which time he might enter any objections to it. The STAR Board, on which sat a personnel technician, one other officer, and a qualified civilian then made the final assignment, and the soldier was ordered to one of the colleges.

At the termination of specialized training, the soldier was recommended for further training in an officer candidate school; appointment as a technical non-commissioned officer; return to troops; in exceptional cases, detailed for Army advanced technical training; or in very exceptional cases, to be made available for technical work to be done out of the Army, but deemed to be highly important to the war effort.

Selection of Participating Schools

A joint committee consisting of representatives of the Armed Services and the War Manpower Commission was set up to select the institutions to participate in the program. Those institutions which had the requisite facilities for training were given preference to obviate the necessity for extensive construction. A Joint Army and Navy Board supervised all contracts with educational institutions in order to insure that the terms and provisions thereof were uniform. The board consisted of a civilian educator as Chair-

man (the comptroller of Purdue University), one Army representative, and one Navy representative.

An expenditure of \$159,897,000 was planned in the prosecution of the program during the fiscal year 1944. Reimbursement to the various colleges was not standard. Variation in the construction of the college plan, the level of faculty salaries, the normal teaching load, and the cost of food and medical care were reflected in planned payments. It was expected that expenditures would cover costs, but would not effect any leveling between institutions. In medical schools payments were the same as for civilian students.

When academic work was furnished by all departments of the college, it was impossible to isolate pertinent costs. In other cases a Budgeted Cost Contract was used. Initial payments were made to schools on the basis of estimated costs. Costs included certain activating expenses covering modifications to meet peculiarly military requirements. Four types of costs were allowable under this item: dormitory equipment, mess equipment, building alterations and remodeling, and special requirements for medical care. A second item of cost, considered in planning a budget, was a "use of facilities" figure. This represented a payment equal to 4 percent of the cost of college structures, intended as compensation for depreciation. The actual cost of the operation and maintenance of the buildings used in the program was also provided for. There was an instructional item, made up of cost of faculty, supplies, textbooks, and special instruments. Fourth, for the cost of food, the Quartermaster estimate of \$1.25 per day was used. Finally, from \$2.00 to \$3.00 per month per man was used as the probable cost of medical and dental care, which was furnished to the maximum possible extent by the college staff.

In one school for advanced engineering instruction, where no activating expense was necessary, the Budgeted Cost Contract provided for: facilities payment, \$5.50 per month per man; operation and maintenance, \$18.00; instructional costs, \$30.00; medical care, \$3.00; and food, \$26.70.

Renegotiation of contracts was provided for, in case operation showed that actual cost varied from the estimate. Periodically, schools were to submit sworn statements of expenditures. New figures for the subsequent quarter were then to be determined in order to absorb the profit or to cover unforeseen expense.

It was planned that 500 institutions would be included in the Army program. By June 30, 1943, Army Specialized Training contracts had been arranged with some 150 separate educational institutions. The total maximum capacity of these institutions, including STAR capacity of 20,000, was about 84,000, approximately one-fourth of which was for medical, dental, and veterinary courses.

By May 31, 1943, a total of 17,567 men were tested and qualified for the Army Specialized Training Program. In order to obtain this number, it proved necessary to examine over 200,000 soldiers scattered in camps throughout the United States. The rapidity with which the program developed was shown by the fact that by June 30, 1943, there were approximately 37,400 men in schools, with several additional thousands qualified for

eventual admission. It was anticipated that the number of men would build up quickly to the total of 150,000 trainees authorized under the program, after which a steady flow would be maintained to replace graduates.

One of the most serious problems confronting the Army Specialized Training Program was the shortage of prospective engineers qualified to enter the advanced phase. It appeared that most of the required engineers would have to come from graduates of the basic phase. Special directives were sent out to Army units in an effort to comb out all men who might be qualified for the engineering program.

Another problem was the reluctance of commanding officers to give up good men who qualified for the program. Also the men themselves were reluctant to go to school instead of to the "front lines". Every effort was made to convince both of the importance of the program. The Chief of Staff in a memorandum on April 1, 1943, characterized the number of eligible men recommended for training as "disappointing", and called for every echelon of command to "support this program and make it a success". At the end of the year it was rapidly becoming one.

CHAPLAINS

The Corps of Chaplains grew from 2,900 on July 1, 1942, to over 6,000 on June 30, 1943. In order to provide an adequate ministerial service to the Army, at least an additional 3,000 chaplains were needed. About 4,300 of the chaplains on duty at the end of the fiscal year were Protestant clergymen, 1,500 were Roman Catholic, and 150 were Jewish. The number of Negro clergymen grew to some 270 men, but this was inadequate for the needs of the Army.

The procurement of chaplains remained a grave problem throughout the year. Clergymen possessing the educational and theological training, the physical stamina, and the qualities of leadership required for a chaplain were in great demand in the civilian ministry. All faiths cooperated in trying to relieve the shortage. The Protestant churches during the year took steps to insure that clergymen becoming chaplains would return to active pastoral work at the end of the war. Formal recognition was extended to all churches whose pastor entered the Chaplaincy of the Army of the United States.

The shortage of Catholic clergymen in the Army was temporarily relieved by the service of some 580 civilian "auxiliary chaplains". This was acknowledgedly an expedient and not a permanent solution. Ministers and clergymen from the territory around a military camp were helpful in conducting special religious services and in meeting special demands. These clergymen, however, could not meet the full need for personnel to provide for the spiritual welfare of the Army.

In the selection of clergymen, it was a policy of the War Department of long standing to assign quotas only to those denominations with 50,000 or more adherents as indicated in the United States census or in *The Yearbook of American Churches*. For smaller religious groups, experience indicated that the number of members within the Army was too small to warrant a full-time Chaplain at any post or with any military unit. During the year

1943 recognition was extended by the Chief of Chaplains to the (Fundamentalist) American Council of Churches and a quota of clergymen was assigned to it for recruitment as chaplains.

The Chaplain School was transferred from Fort Benjamin Harrison to Harvard University on August 8, 1942. The authorized strength was increased from 75 to 450. All newly appointed chaplains attended this school where they were acquainted with military policies and procedures. The course lasted 28 days. During the fiscal year ending June 30, 1943, over 4,000 chaplains completed this course.

Chaplains were stationed at reception centers and at all Army posts. They were also stationed at general hospitals and at ports of embarkation. In addition to service on American troop transports, arrangements were made during the year for a chaplain to be assigned to each British and Canadian transport vessel on which there was an American commanding officer. A chaplain was assigned to each service command headquarters during the year to direct local recruitment efforts and to supervise the training and activities of chaplains within the area. In turn, the post Chaplain was expected to supervise the work of all other chaplains at an Army installation. Tables of Organization called for 14 chaplains to be assigned to every division.

During the year the problem of providing adequate religious services for prisoners of war became a major concern. The War Department determined as a matter of policy that such religious service should be provided by the Corps of Chaplains. The Swiss Legation, handling German interests in the United States, officially made representations to the War Department complaining that the religious welfare of German prisoners of war within the United States was not being adequately handled. This situation was immediately rectified. Under the terms of the Geneva Convention, chaplains, when captured, were supposed to be returned immediately to their own Army. This meant that no German clergymen were among the prisoners of war sent to this country. The biggest problem in providing adequate religious services to prisoners of war was the difficulty of language.

During the fiscal year 1943 nearly one million religious services of all faiths were held throughout the Army, with an estimated attendance of 57 million persons. Over 4,300,000 Testaments of the Protestant, Roman Catholic, and Jewish faiths were distributed during the year. The Servicemen's Christian League was formed during the year to provide an organized fellowship of Protestant men in the Army administered by Protestant chaplains.

Protestant, Catholic, and Jewish church groups worked closely with the Chief of Chaplains during the year, advising on recruitment, on training, and on general ecclesiastical matters. The official representative of Protestant churches in the United States was the General Commission on Army and Navy Chaplains. The Army and Navy Ordinariate was the official agency of the Roman Catholic Church. The Jewish Welfare Board handled questions affecting Jewish chaplains. Arrangements were made for clergymen of various faiths to visit Army posts in the United States to inspect the facilities and practices of the Army in providing for the spiritual welfare of the

soldier. Also during the fiscal year 1943 arrangements were made for visits to overseas theaters. Bishop Adna W. Leonard, chairman of the General Commission on Army and Navy Chaplains, visited the European Theater in the spring of 1943. With Lieutenant General Frank M. Andrews, Commanding General of the European Theater, and their official party, Bishop Leonard was killed in an airplane crash in Iceland on May 3, 1943. Archbishop Francis J. Spellman, Vicar Castrensis of the Army and Navy Ordinariate, toured the European, African, and Near Eastern Theaters in 1943. A special event of this visit was an Easter mass for the armed services held in Jerusalem. Arrangements were also made for Bishop John A. Gregg of the African Methodist Episcopal Church to visit camps of Negro troops stationed overseas.

The National Conference of Christians and Jews during the year made available the services of teams of three leaders to lecture at posts and to confer with chaplains within the United States. This helped to link pastoral activities of the Army with the work of civilian clergymen.

The Office of the Chief of Chaplains published reading lists, book reviews, and other materials for the guidance of chaplains; it assisted the production of a film on chaplains for public release; and it collaborated in the presentation of the program "Chaplain Jim, USA," presented by a major network. The Office cooperated in publishing *The Army and Navy Chaplain*. Considerable time was spent in writing letters to the next of kin of wounded and deceased soldiers, in helping families of soldiers to obtain necessary assistance from time to time, and in communicating messages between families and soldiers.

By April 1, 1943 more than 1,300 Chapels had been authorized for construction within the United States. At Army posts having from 300 to 1,000 men, a single building serving as theater, recreation center, and chapel was constructed. At posts where 1,000 to 2,500 men were stationed, a combined theater and chapel was erected. A semi-permanent type chapel was built at posts with more than 2,500 men; if the post had over 20,000 men, two chapels were built. A theater-type chapel was also constructed at each post with more than 2,500 men for each regiment or 3,000 persons. Separate chapels were also built at general hospitals. Theater of operations-type chapels were approved for new construction in 1943.

Suggestions were made during the year once again that soldiers be compelled to attend religious services. Such proposals were not approved, since they were contrary to War Department policy. The needs for office space for chaplains had been met for the most part by the end of the fiscal year. Rooms were provided in chapels and in combination buildings where chaplains might confer with soldiers. It was a part of the responsibility of a chaplain to provide advice and counsel of the type which the soldier was accustomed to receive from family and friends. A major problem continued to be the provision of adequate space for chaplains on transport vessels taking soldiers overseas. The amount of equipment that chaplains attached to military units might carry overseas with them was strictly limited during the year because of the overwhelming demands upon transportation space. The

problem of adequate transportation for chaplains during maneuvers and in combat areas continued to be troublesome.

Perhaps the outstanding development of the year was the continued and increasing support of all religious faiths in providing an adequate spiritual ministry to soldiers.

SPECIAL SERVICE

The maintenance of morale and the guidance of soldier use of leisure time were responsibilities vested in troop commands. To assist commanders in performing these responsibilities, the Army Service Forces provided recreational facilities and other services. During the fiscal year 1943 the mission of Special Service was carefully defined as one of assisting commanders in developing and maintaining the mental and physical stamina of military personnel.

During the fiscal year 1943 the Special Service Division of Headquarters, Army Service Forces began the production of a series of seven documentary films on the general subject "Why We Fight." The first four of these films entitled "Prelude to War", "The Nazis Strike", "Divide and Conquer" and "The Battle of Britain", were distributed to soldiers all over the world. The remaining three films were to be completed and distributed in the coming fiscal year. Designed for troop use, the films proved so successful in portraying the long series of Axis and Japanese aggressions which led to Pearl Harbor that they were released for showing to the general public by the Office of War Information and the motion picture distributors of the nation.

The Special Service Division continued publication of a series of pocket guides for soldiers going overseas. The initial success of the first two such pocket guides published during the fiscal year 1942 led to the preparation and publication of additional guides on China, New Caledonia, Iraq, Iran, Egypt, Australia, and other lands where American soldiers were being sent. These guides aided soldiers in understanding the customs of the people where they were stationed. In this way soldiers were helped to avoid misunderstandings that might arise out of ignorance of local ways. An example of the type of information was this advice on shopping in India:

"A small storekeeper or trader at a bazaar in most cases will ask you more for his goods than he expects to get. Bargain with him. It is a game. He expects to be beaten down to anywhere from two-thirds to one-third of his asking price. Everyone bargains. It is part of the social life of these people. But they do it politely and in good humor."

The guide book for North Africa remarked about coffee and tea drinking:

"Thick coffee served in small cups is drunk in the large towns where Turkish customs prevail, though in most of North Africa the favorite beverage is green tea. It is served sweet, and flavored with mint. If offered either drink by a native host, you should not refuse it or throw away any part of it. The polite thing is to accept three cups if they are offered, but under no circumstances to accept a fourth. To drink less than three is considered as ill-bred as to take more than that."

As a further help to soldiers stationed overseas, the Army Service Forces produced phonograph records to aid in language instruction. Twenty-five languages and dialects were taught through records and word lists, enabling the soldier to hear and read at the same time. A few hours of constant application would give a soldier the basic minimum command of a language. More advanced language study was also provided to those obliged to have constant contact with the natives of the country in which they were stationed.

The weekly news map begun during the fiscal year 1942 was continued in 1943. Showing major world events, this news map was circulated to Army posts and to major industrial plants working on war contracts. The circulation of this map during the fiscal year grew from approximately 30,000 in July, 1942, to 83,000 in June, 1943. The publication of the newspaper, *Yank*, was continued with a total world-wide circulation by the end of the fiscal year of over 400,000 copies.

In order to guide the Special Service Division and troop commanders in their morale and informational activities, surveys of troop opinion were conducted on a sample basis. In this way it was possible for the Special Service Division at Headquarters, Army Service Forces, to plan its program more intelligently to meet well-defined needs. Typical of the surveys was one conducted in February, 1943, among a group of 2,353 enlisted men stationed in the United Kingdom. The men were asked "Do you have trouble finding things to do in your free evenings?" Twenty-four percent of the men answered that they had such trouble "most of the time." Another 20 percent said they had trouble "much of the time." In other words, 44 percent of those asked complained of difficulty in finding things to do in their free evenings. Fifty-six percent of the men had no such complaint. Other questions were asked designed to elicit information about the types of entertainment the men would prefer in camps and towns. On the basis of these answers a recreational program was set up by the Commanding General of the European Theater of Operations, assisted by the Army Service Forces.

Other attitude surveys undertaken by the Research Branch of Special Service Division, Army Service Forces, covered such matters as adequacy of library facilities; the influence of documentary films; opinions on food, clothing, and laundry; attitudes toward medical, dental, and hospital services; desired recreational programs and facilities; reading habits; and similar subjects. As these titles show, the purpose of the surveys was to determine what the soldier thought of his Army environment and to indicate deficiencies where remedial action was necessary. Knowing what the soldier wanted, the Army Service Forces did its best, consistent with military demands, to meet those desires.

The Army Motion Picture Service of Army Service Forces operated nearly 1,000 motion picture theaters at Army installations throughout the United States. Here latest releases from motion picture producers were shown to military personnel for an average admission fee of 15¢. During the fiscal year 1943, more than 6,500 weekly programs were presented to a daily

audience of more than 300,000 persons. The admission fee paid all operating costs including the building and equipping of theaters. Profits were turned over to welfare funds at the various posts. The Army Motion Picture Service likewise supplied 16mm. prints of commercial films for showing to troops overseas.

The constructive use of leisure time meant providing the soldier not simply with recreational activities but also with means for improving his abilities. During the fiscal year 1942 the Special Service Division organized an Army Institute, cooperating with 75 colleges and universities, to provide correspondence courses to soldiers. During the fiscal year 1943 the name was changed to the United States Armed Forces Institute and the scope of its operations enlarged to include men in all armed services. By the end of the fiscal year, 86 universities and colleges were cooperating in offering 64 high school and technical courses. The charge to the soldier was \$2.00 for each course, covering one-half the cost. The remainder was paid by the Army. Some of the courses contained sealed tests to be administered by an officer when the soldier felt prepared to take it. For these courses credit was allowed by the various schools toward an academic diploma or degree. Two-thirds of the enrollees in these courses were soldiers stationed overseas.

The Army Service Forces operated some 2,000 libraries containing fifteen million books at camps, posts, and stations throughout the United States. Books were also purchased to send overseas. Through the USO Camp Shows, Inc., the Army Service Forces arranged for bands, orchestras, and radio, stage and screen stars to visit Army camps within the United States. Full-length dramas and musical reviews were produced as well as variety shows. A number of units sent overseas were limited to short variety acts. During June, 1943, over 90 entertainment troupes were visiting Army camps.

The Special Service Division in Headquarters, Army Service Forces, provided numerous services to be used by post and troop commanders. A number of song books were published with a circulation running into the millions. Instructions were prepared about how to play such instruments as the tonette, ocarina, and harmonica. Special kits of athletic equipment were devised for purchase by the Quartermaster Corps and a manual of instructions for various games was prepared. These were issued on an allowance basis to troop units and Army posts. Special materials for orientation lectures were prepared to assist the basic training of soldiers. Books on military subjects were published and a booklet of laws and regulations of special interest to the soldier in his personal affairs was prepared and issued.

Overseas troops were sent 16,675 sets of magazines a month. Each set consisted of approximately 50 copies for each 100 men. The magazines ranged all the way from detective stories and westerns to news magazines. To conserve tonnage in shipment, special editions of five magazines were published exclusively for troops overseas with all advertising matter eliminated. The size was reduced and thin paper was used. As a result, some 65 tons of shipping were saved each month.

Entertainment, educational, and information programs were broadcast by long and short wave radio to troops overseas. Many of these programs were

produced exclusively for soldiers. Others were regular commercial radio programs transcribed for rebroadcast overseas. Twenty-three short wave stations on the East and West Coasts of the United States were used to beam programs to areas where United States troops were stationed. Approximately 75 commercial or government-owned stations overseas and another 15 Army-operated stations in turn relayed these programs to American troops in their broadcast area.

The Army Service Forces maintained a school for training officers from Army camps and from troop units in Special Service activities. First located at Fort George G. Meade, Maryland, the officers' school for Special Service was moved to Washington and Lee University, Lexington, Virginia, on December 7, 1942. The authorized capacity of this school was 400 students per course of four weeks' instruction.

The Army Service Forces also ran two unit training centers located at Fort Meade, Maryland, and Camp San Luis Obispo, California. By the end of the fiscal year, approximately 1,800 men, comprising 15 units, were being trained for assignment to overseas theaters and armies for Special Service activities.

XII

MEDICAL CARE

Although the destructive weapons of the present war excelled any previously devised, although combat areas were spread all over the world, the health of American troops was preserved or restored with efficiency and dispatch.

One of the major medical innovations of this war was the use of mobile hospitals operating near the front lines, often within range of the enemy's artillery. In other wars, facilities for the early definitive treatment of the wounded were located well to the rear of the combat areas. One reason for this was the dependence upon railway transportation that could not be brought close enough forward. Motorized and airborne mobile hospitals, equipped for complete care of the wounded, advanced near the combat zone. This practice made possible the exceptionally rapid surgical treatment of the wounded. The result was a marked downward effect upon fatality rates.

Health of the Army

The rapid expansion of the Army and its highly mechanized characteristics; the global nature of the war with battlefields spreading from the malarious jungles of the South to the tundras of the North; the liberalization of the physical standards of men inducted into the Army; the rise in the mean age of inductees—all these factors must be kept in mind in appraising the health of the Army.

Three basic indices were used for measuring morbidity and mortality: (1) admission rate; (2) non-effective rate, and (3) death rate. They were essentially an appraisal of ill health, a problem of morbidity and mortality.

The annual admission rate showed the number of sick admitted during the year per 1,000 strength; the non-effective rate, the proportion of the men absent from duty because of sickness or injury. Thus a total yearly non-effective rate of 30 signified that that number of men per 1,000 were incapacitated each day. The death rate was the yearly number of deaths per 1,000 strength. As measured by these indices, the health record of the Army was quite satisfactory in the United States as well as overseas.

The non-effective rate for the troops in the United States was lower during the fiscal year 1943 (32.9) than in 1942 (34.4) and 1941 (33.8). It was lower, even though the admission rate was higher—803 in 1943 as compared with 788 in 1942.

The increase resulted from the occurrence of more cases of sickness. There were fewer cases of injuries. The increase of diseases was chiefly caused by a greater number of respiratory diseases. The average loss of time from such cases was so small that the greater number of them did not increase the non-effective rate sufficiently to overbalance the decline in the loss of time from other causes.

The death rate from all causes was the lowest ever recorded in the history

CHART 49

DAILY NONEFFECTIVE RATES PER 1,000 STRENGTH OF THE ARMY OF
THE UNITED STATES IN THE CONTINENTAL UNITED STATES,
1940-1941, 1941-1942, 1942-1943

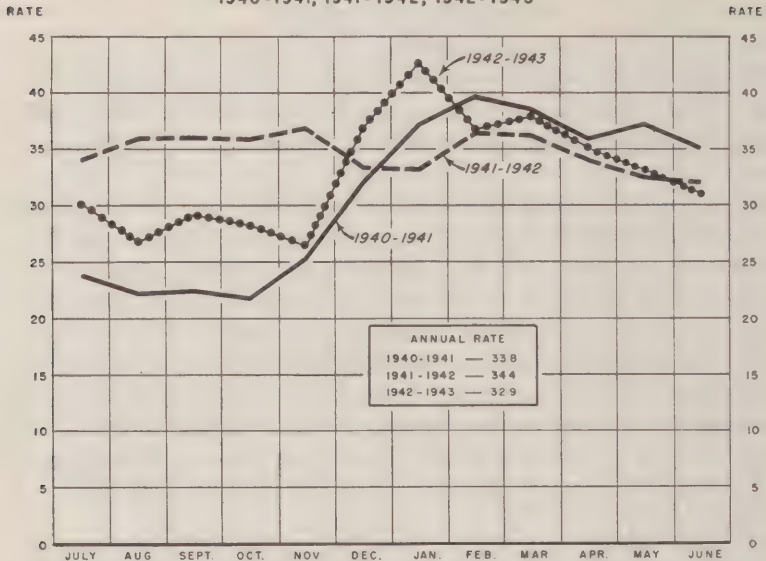
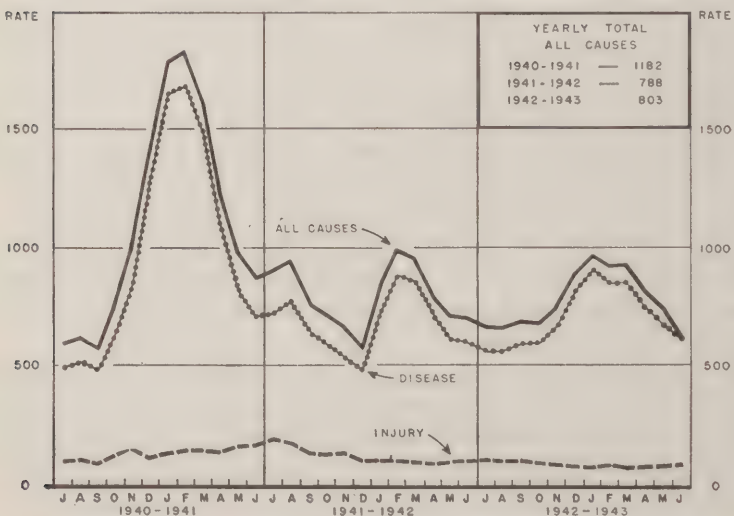


CHART 50

ANNUAL ADMISSION RATES PER 1,000 STRENGTH OF THE ARMY OF
THE UNITED STATES IN THE CONTINENTAL UNITED STATES,
1940-1941, 1941-1942, 1942-1943



of the Army in the fiscal year 1943—2.03 as compared with 2.2 in 1942, and 2.1 in 1941. Of the total, 0.7 was due to diseases and 1.3 to injuries.

Venereal diseases as usual presented a major problem. Although the control of such diseases in the Army was as effective as in the previous years, the admission rate from them increased slightly to 41.1 from 40.4 for 1942. The rise began around December, 1942, when the Army started to induct uncomplicated cases of gonorrhea and chancroid, and of syphilis, except cardiovascular, cerebrospinal, and visceral cases. In addition, a considerable number of venereal cases that were contracted during the furlough time allowed inductees were recorded as admissions. These raised the admission rate.

Relatively there were more cases of measles and scarlet fever but fewer mumps. There was an abnormal number of cases of meningococcic meningitis, but the disease never reached an alarming state.

The combined non-effective rate for theaters of operation overseas (33.7) was not much higher than the one for the United States (32.9). There were, however, wide variations between such rates in the several theaters, the range being from 53.0 for the South Pacific area to 23.2 in North America. The higher rates were partly due to battle casualties and partly to specific tropical diseases. In the case of the South Pacific, it was chiefly malaria.

The combined admission rates for overseas theaters were: 756 for disease, 138 for injuries, and 13 for battle casualties. The variations by theaters were large; the highest ones from disease were in the South Pacific (1147), Southwest Pacific (1026), Middle East-Central Africa (1019), and Asiatic (975). For the other areas the admission rates were about the same as in the United States and in some instances even lower.

The admission rates for injuries paralleled the admission rates for disease. The rates for injury were: 187 in the South Pacific, 183 in Southwest Pacific, 178 in Middle East-Central Africa, and 93 in Asiatic theaters of operation.

The combined death rate was 2.7 for overseas as compared with 2.1 for the continental United States. As might be expected, the highest ones were in the Southwest Pacific (4.2), Middle East-Central Africa (4.2), Asiatic (3.9), and South Pacific (3.2). The higher death rates in those theaters were due largely to more deaths from injuries, with only a slightly greater number from disease. The average for all theaters was: from disease 0.5, injury 1.8, and battle casualties in hospital 0.4.

Research and Development Work

Medical research projects were of two types: those involving *fundamental* scientific research, carried on by cooperating civilian agencies; and *developmental* projects executed by the Medical Department under the Surgeon General. This division of function proved to be economical of personnel and funds, and enabled the Army to utilize to the fullest possible extent the advice and assistance of the most highly qualified civilian groups. On July 1, 1942, 86 projects were active; during the fiscal year 48 new ones

CHART 51

RESPIRATORY DISEASE ANNUAL ADMISSION RATES PER 1,000 STRENGTH OF THE ARMY OF THE UNITED STATES IN THE CONTINENTAL UNITED STATES 1940-1941, 1941-1942, 1942-1943

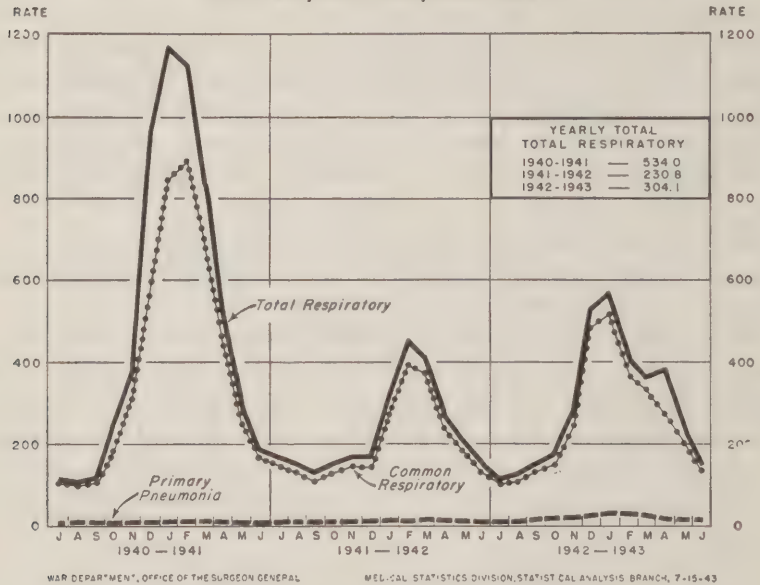


CHART 52

VENEREAL DISEASE ANNUAL ADMISSION RATES PER 1,000 STRENGTH OF THE ARMY OF THE UNITED STATES IN THE CONTINENTAL UNITED STATES, 1940-1941, 1941-1942, 1942-1943

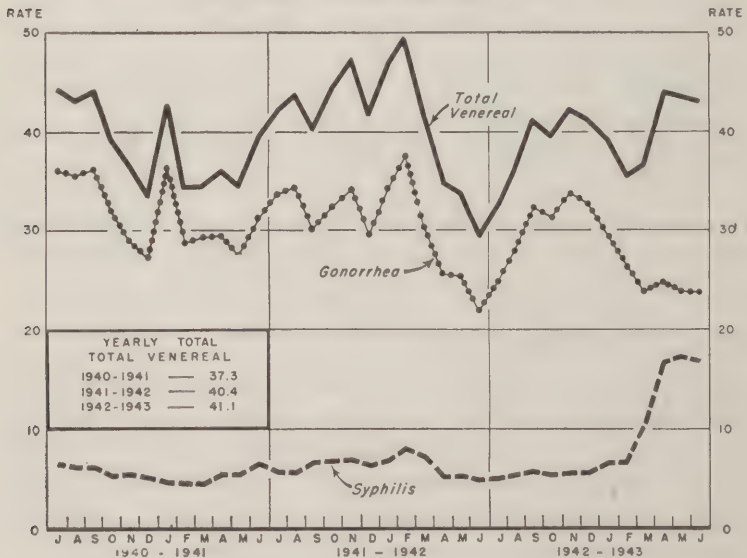
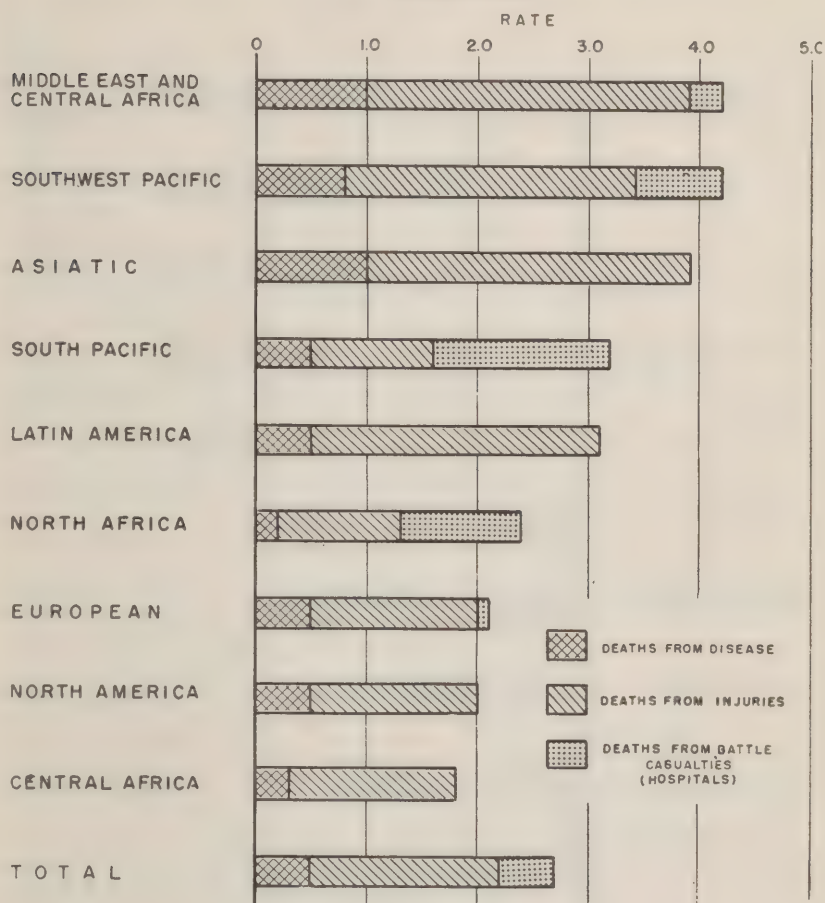


CHART 53

TOTAL ANNUAL DEATH RATES PER 1,000 STRENGTH OF THE ARMY OF THE UNITED STATES, OVERSEAS, BY THEATERS OF OPERATION, 1942-1943



were initiated, and 45 completed; on June 30, 1943, there were 61 active projects.

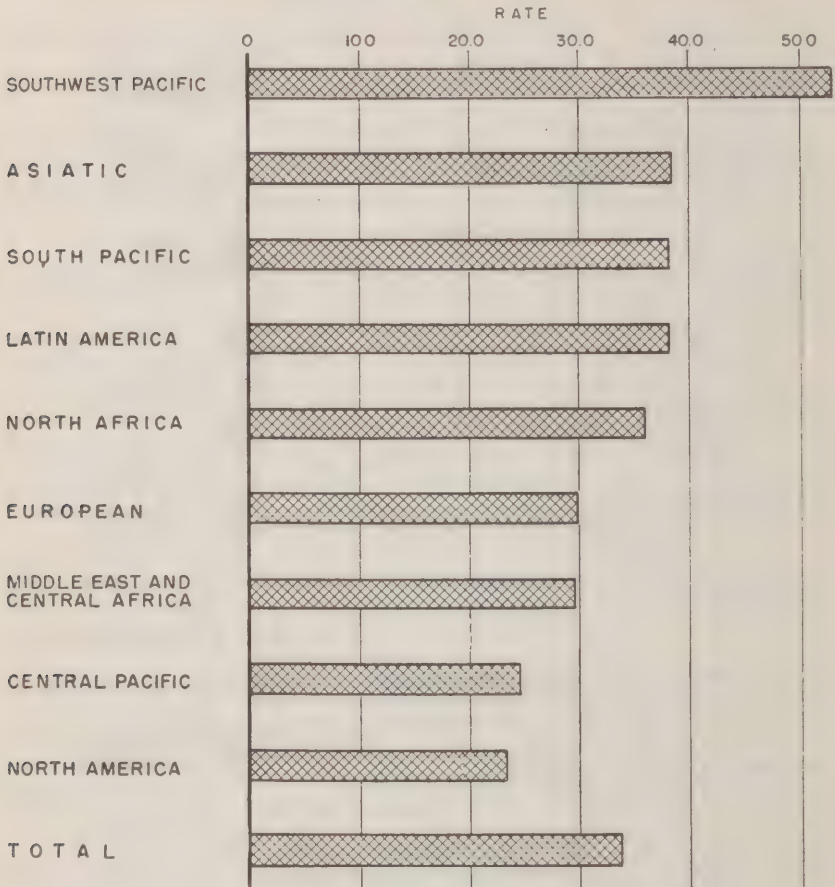
Research expenditures of the Medical Department amounted to \$423,226 in the fiscal year 1943, compared with \$92,203 in 1942, \$78,957 in 1941, and only \$12,614 in 1940.

The outstanding development of the year was the successful trial of a new chemo-therapeutic agent of brilliant promise—penicillin. Limited clinical use indicated that it was remarkably efficacious in controlling many infections that were resistant to other agents. The promise of penicillin in the treatment of otherwise hopeless infections led in May, 1943, to the approval of a large-scale program of experimentation and clinical testing of the new therapeutic agent. An additional \$467,000 was made available for this study alone.

Among other recent developments in medicine was the continued use of

CHART 54

DAILY NONEFFECTIVE RATES PER 1,000 STRENGTH OF THE ARMY OF
THE UNITED STATES, OVERSEAS, BY THEATERS OF OPERATION,
1942 - 1943



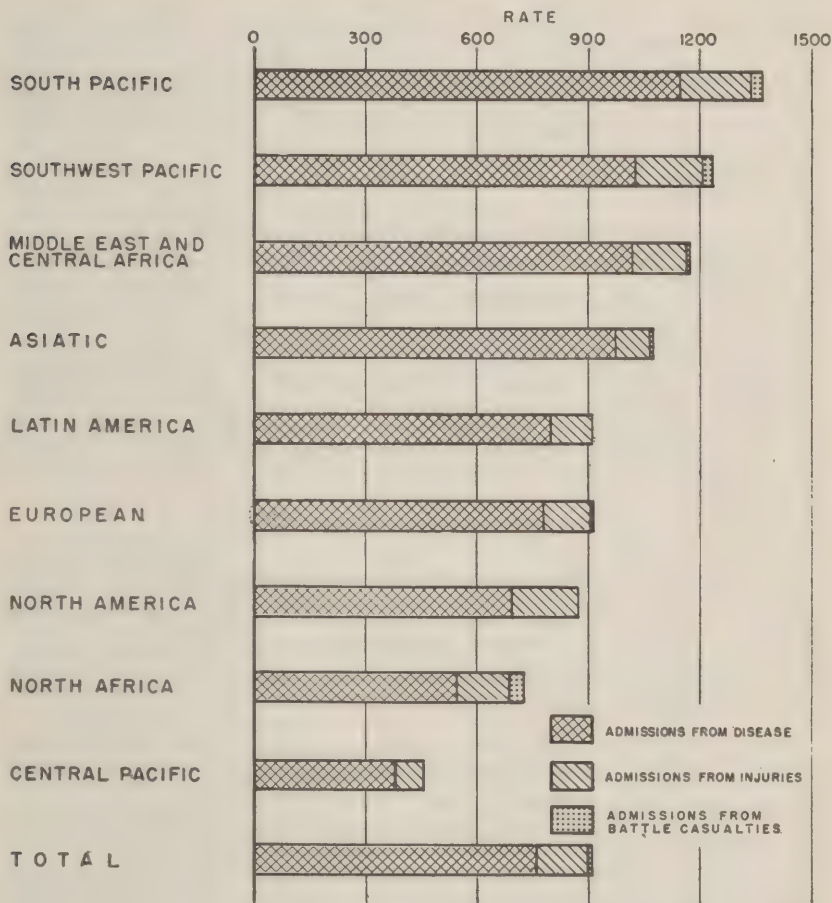
blood plasma to combat shock and hemorrhage; the use of atabrine in malaria therapy; the perfection of new anaesthetics, particularly sodium pentothal which was quick, reliable, and easy to administer; and the perfection of an X-ray machine for field hospitals.

The activities of Edgewood Arsenal in the development of preventive and therapeutic measures against casualties caused by chemical agents were so increased as to overtax the capacity of its facilities. A new laboratory was approved in June, 1943, and construction immediately started.

Research continued on an expanded scale at the Army Medical Center in the diagnosis, prevention, and treatment of diseases and wounds. Emphasis was placed on the development of vaccines, serums, blood substitutes, and on medical and dental supplies, equipment and procedures. Research on X-ray equipment and radiology continued at the Army School of Roent-

CHART 55

TOTAL ANNUAL ADMISSION RATES PER 1,000 STRENGTH OF THE ARMY OF THE UNITED STATES, OVERSEAS, BY THEATERS OF OPERATION, 1942-1943



genology in Memphis, and on the diagnosis, prevention, and treatment of animal diseases at the Veterinary Research Laboratory at Front Royal, Virginia.

The medical problems of the Armored Forces were, like the problems of aviation medicine, a relatively new development of this war. The Armored Force Medical Research Laboratory, Fort Knox, Kentucky, was activated in August, 1942. It undertook an extensive research program on problems peculiar to service with armored vehicles; and on physiological problems met by troops serving in climates with extremes of temperature and humidity.

Many individual research projects were conducted at various military stations with facilities peculiarly suited to the intended investigation. A study of motion sickness was undertaken at Camp Edwards, and a study of der-

matology at Fort Benning. Many preventive and therapeutic agents and processes, as well as types of equipment, could be properly evaluated only by observation of the result on military personnel or in situations under military control.

Close liaison relationships were maintained by the Medical Department with the Division of Medical Sciences of the National Research Council. This cooperation made available to the Army the professional advice and assistance of some 300 eminent physicians, surgeons, and scientists representing all fields of knowledge with a potential capacity to contribute to new developments in military medicine.

In the field of medical research, the committees and subcommittees of the Council were able to conduct research of a fundamental character on numerous problems referred to them by the Surgeon General. Some of the projects were financed by the Committee on Medical Research of the Office of Scientific Research and Development, while others were financed by civil institutions and philanthropic foundations. Over \$5,000,000 was expended by the Office of Scientific Research and Development on medical research during the fiscal year 1943. In addition, the Medical Department of the Army had access to research findings of other agencies accumulated at a cost of many millions of dollars.

Preventive Medicine

The activities of preventive medicine expanded greatly both in range and complexity during the fiscal year 1943. In shaping Medical Department programs and operations, the Surgeon General had the cooperation and advice of all important governmental and civilian agencies concerned with public health and preventive medicine.

Malaria was the primary medical problem of the year, since it constituted a threat to the success of operations in tropical theaters. To combat this menace, many measures were initiated, including the training of malariologists and the organization of survey and control teams for overseas duty in malaria areas. A number of these special units were activated. In training Medical Corps officers for this specialized work, emphasis was placed upon practical field experience, following formal instruction in tropical medicine at the Army Medical Center. Moreover, constant study was devoted to the development of new insecticides, mosquito repellants, and antimalarial drugs. Extraordinary success attended the efforts to control the disease among troops in this country, as evidenced by the fact that the malaria rate among Army personnel stationed in the United States was 0.65 per 1000 per annum in 1942, the lowest in the history of the Army. It was hoped that through continued application of mosquito-eradication measures and the perfection of better methods of treatment, rates in overseas regions might be reduced.

One step taken by the War Department toward venereal control was the assignment of specialists in this disease to the major headquarters of the Army, to all camps, and to all theaters of operation. These officers analyzed the problem, determined where and under what circumstances soldiers were being infected, why rates varied, and what new forms of treatment or im-

proved administrative methods might reduce the days lost from duty. These officers cooperated with local health and police authorities, and were influential in starting detention homes for the treatment of infected women.

Other developments contributing to the favorable venereal disease outlook were: more effective prophylactic measures, a program of instruction in the fundamental facts regarding the diseases and their control, and improvement in treatment methods. Sulfa drug therapy virtually revolutionized the treatment of gonorrhea. The new drug penicillin was also used successfully in treating this disease. Syphilis therapy was shortened and intensified. Treatment in the usual case was completed in six months as compared with 12-18 under the system previously in operation.

Mobilization of new recruits for the Army and the consequent crowding of men in barracks produced an unusual number of cases of meningococcic meningitis, rheumatic fever, and primary atypical pneumonia. The most striking development in the prevention of meningitis in military groups was made during the course of this outbreak through the administration of sulfonamides to entire bodies of troops. This was done at several large posts. In those instances where control groups were set up, definite evidence was obtained that the incidence of the disease was markedly reduced by this means.

An epidemic of rheumatic fever was localized in posts of the Seventh Service Command. Plans were made for an extensive field study in regions where cases were occurring.

Atypical pneumonia was made reportable in March, 1942. Cases increased steadily to a peak in early January, 1943, then gradually declined. Numerous investigations were undertaken to shed more light on this somewhat baffling infection.

Over 700 cases of coccidioidomycosis occurred during the first eleven months of the fiscal year. The cases were limited to certain endemic areas in the southwest United States. Outbreaks occurred following troop maneuvers in regions known to be heavily infested with causative fungus.

The few cases of typhoid and paratyphoid fever reported from the United States were investigated to determine whether vaccine failed to produce immunity. Evidence of such failure was extremely rare.

The incidence of respiratory diseases was higher than in the previous fiscal year. There was no epidemic of influenza.

Efforts were continued to develop new and more efficacious immunizing agents for use in the Army. The potency and immunizing properties of the typhus, cholera, and plague vaccines were constantly being improved through research activities. An aqueous-base yellow fever vaccine replaced the serum-base vaccine formerly considered by many to have been associated with jaundice. The continued routine use of tetanus toxoid completely eliminated tetanus among troops.

Among the new supplies and sanitary appliances developed during the year were the effective delousing agent, methyl bromide. Fumigation bags and ampoules of this product were made items of organizational equipment and

sent to overseas theaters, particularly to North Africa. Reports on the usefulness and efficiency of this product in the field were very favorable.

Other notable sanitary developments include the perfection of the pyrethrum-freon aerosol "bomb" spray, a reliable insecticide; an effective larvicide which exerts prolonged action against mosquito larvae; new measures for the control of bedbugs and roaches in barracks and kitchens; and improved dishwashing facilities in Army messes.

Joint studies with the Quartermaster General's Office and the Chemical Warfare Section were undertaken to provide clothing to meet physiological requirements of troops operating under extremes of climate and to incorporate protective agents in clothing worn by troops engaged in chemical warfare.

Further advances in the science of sanitation dealt with water purification, salt and water requirements and acclimitization of troops subjected to hot climates, disinsectization of airplanes, and a large group of measures aimed at the improvement of sanitation within the Army and the protection of the country against the introduction of disease from abroad.

Sanitary surveys of 86 areas or countries were completed in which information was gathered about the current prevalence of certain infectious diseases, environmental conditions, medical facilities, and varied sanitary conditions. These surveys were utilized in planning military operations and in the development of major civilian programs of health control and relief.

Much of the responsibility of the Army Service Forces rested upon the well-being of the 730,000 industrial workers in the 500 Army-operated industrial plants. An extensive industrial hygiene program was undertaken to protect these employees, many of whom were constantly working with dangerous and toxic substances. The objective was to prevent the loss of man-hours of production. Plant dispensaries, first-aid service, medical supervision and hospitalization, safety precautions, and the improvement of working conditions were parts of this service.

Medical Practice

The medical and surgical treatment of the sick and wounded in Army hospitals was on the same high plane as that in the better hospitals in civil life. Professional advances were put into practice promptly. Limited experience indicated that the fatality from war wounds had been greatly reduced (a) by the use of sulfa drugs, (b) by the transfusion of blood, and of dried liquid plasma, (c) by early surgical treatment at advanced mobile hospitals, and (d) by the rapid and early evacuation by air to fixed hospitals.

The assignment of specialists as consultants to Service Command Headquarters and to surgeons in overseas theaters helped to raise medical standards. Carefully chosen officers with high levels of professional attainment were assigned to these posts. In the United States these consultants coordinated the professional practice, appraised therapeutic and diagnostic procedures, and evaluated, and improved the quality of care. Their reports

made possible appropriate modifications of existing medico-military practice and the innovation of more efficacious procedures.

Continued efforts were made to prevent the entrance into the Army of cases of tuberculosis, and to detect, treat, and dispose of such cases already in the Army. All men and women entering the Army had chest X-ray films before acceptance. Particular emphasis was placed upon improving diagnosis at induction centers. The preparation of an atlas of chest X-ray films, the technical improvement in films, and other steps contributed to the more rapid discovery and disposition of cases. Of all cases of tuberculosis admitted to the Army through error, 30 percent were discovered and put under treatment in the first month of service; 75 percent within the first six months. In the United States the admission rate for tuberculosis was 1.9 per 1,000 in 1941, 1.6 in 1942, and 1.3 in the first quarter of 1943. The corresponding rate during the World War I was 13.52.

The mental health of an Army was just as important as its physical health. A nervous or mental disease might render a man just as non-effective as malaria or a gunshot wound. The mental illnesses found in the Army were similar to those found in civilian life. No new mental disturbance caused by the war had been detected by June 30, 1943, either from our own experience or from that of our Allies. Although the clinical picture found among soldiers was similar to that of civilians, many military neuropsychiatrists observed numerous schizophrenic-like manifestations, emotional disturbances, and peculiar personality disorders which appeared rapidly, approached a full-blown psychosis frequently defying differentiation from the accepted syndromes, only to dissolve quite rapidly under brief hospitalization.

Efforts were made to improve screening at induction and training centers. At the induction centers large numbers of men were processed as rapidly as possible. But the time for examination was short; psychiatrists lacked adequate background information on the men; and psychiatrists were scarce. All these problems were faced frankly, and appropriate measures instituted. But no test yet devised was so perfect that it could detect all the psychopaths and potential psychoneurotic individuals on brief examination. If a screen were tight enough to eliminate anybody who might possibly develop a nervous breakdown, it would be so tight as to eliminate nearly everybody.

A second screening process was instituted at the Replacement Training Centers. There a trained staff of psychiatrists, psychologists, and psychiatric social workers, cooperating with line officers, chaplains and others, observed the newly inducted soldier. Worries, fears, tensions, disciplinary problems were analyzed and frequently resolved.

Screening, of course, was not prevention. It "prevented" people who might have nervous breakdowns from getting into the Army, but it did nothing to "prevent" soldiers actually in the Army from becoming psychiatric casualties. It was important that line officers become as conscious of the necessity for preventing psychiatric disorders as they were for preventing malaria or venereal diseases. The major job of preventive psychiatry had to be done by the line officer, since he directly controlled the everyday life of the soldier.

There were many unanswered questions in psychiatry, but it was pretty well established that a soldier's relationship with his officer and fellow soldiers might cause or prevent a nervous breakdown; not only did fatigue, climate, and hunger play etiological roles, but also disciplinary measures, leaves and furloughs, letters from home, promotions, types of training, and job classification had a direct bearing on mental health.

There was a growing body of evidence, moreover, that patterns of attitudes brought to, or developed in the Army, might prove to be of the utmost importance in the causation and prevention of mental breakdowns. A man who wanted to fight was less apt to become a neuropsychiatric casualty than one who didn't want to fight and was in the Army only because he had to be. Attitudes, therefore, were extremely important.

Although shock therapy and occupational therapy could be used in the rear, the British demonstrated that prolonged rest, induced by sedative drugs if necessary, good food, and reassurance given near the front, would return to duty an estimated 70 to 80 per cent of the cases of acute combat neuroses. The experience of American troops confirmed this. Most of the conditions could be cared for in an evacuation hospital; only those resistant to treatment needed to be sent to station and general hospitals in the rear. As in the last war, experience taught that the farther the patient was removed from the situation in which his mental disturbance occurred, the less likely were the chances of his salvage for further duty. On the other hand, the Army couldn't undertake the prolonged care of large numbers of severe cases of psychosis and neurosis. These men had to be discharged.

The disposition of mental cases requiring discharge from the Army was slow. The passage of Public Law No. 10, approved March 17, 1943, simplified the problem. The Federal Government accepted responsibility for the hospital care of such patients. Also soldiers, except those dishonorably discharged, requiring hospitalization after separation from the service, were eligible for care in a Veteran's hospital.

During July and August, 1943, the Surgeon General's Office cooperated in the establishment of a developmental battalion at Fort McClellan, Alabama to determine experimentally the possibility of using limited service men to replace general service soldiers. This and later experiments showed that 5 or 6 percent of the limited service men could be reclassified for general duty. Accordingly, the physical standards of the Army were lowered.

Dental Service

An unprecedented undertaking in mass dentistry fell to the Dental Corps as a result of the very marked reduction of dental standards for induction. Many men entering the service had never received dental care prior to induction. So great was the pressure of work that many clinics operated on a 24-hour shift to take care of the thousands of new inductees and their multiple dental problems.

The immense volume of dental work was accomplished, despite the shortage of dental officers, an acute lack of dental laboratory technicians, and a critical deficiency in virtually all types of equipment and supplies. Measures

were put into effect to relieve, insofar as possible, each of these shortages. Large numbers of dentists were commissioned and their services utilized for professional duties only. There was approximately one dental officer to every 595 men in the Army by the end of the fiscal year. Technicians were being trained in several different centers, provisions having been made for approximately 600 students each month. An increased flow of supplies and equipment to Army posts was also realized.

The incidence of dental and oral infections (cellulitis, cateomyelitis, and the various types of stomatitis) were remarkably low. This was attributed to better camp facilities, including dental clinics; a more adequate hospitalization program; instruction and interest in dental hygiene, as well as well-balanced food rations. The number of jaw fractures was also lower than anticipated.

The five central dental laboratories of Army Service Forces were markedly expanded during the year. Additional equipment and an increase in officer and enlisted personnel assigned to these laboratories resulted in an unequaled production schedule. The establishment of laboratory service at many of the larger camps and the use of civilian laboratory facilities considerably reduced the volume of work carried by the central laboratories, especially for the large number of dentures that had to be constructed in a short period of time for troops alerted for overseas service. The five central laboratories completed 41,129 dentures, or 28 percent of the total number processed for the entire Army in the calendar year 1942.

Veterinary Service

The two primary functions of the Veterinary Corps were: (a) service to animals, and (b) the inspection of meat and dairy products to determine their safety, wholesomeness, and suitability for food purposes in order that the health of troops might be protected. Although the latter was the larger and more important problem, the Army had more horses and mules in 1942 than in 1941.

During the fiscal year about 950 veterinary officers were placed on active duty, making a total of about 1,900 veterinary officers on June 30, 1943. Some 450 veterinary officers received special training at various schools in field service, and in meat and forage inspections. Over 1,400 enlisted men received technician's training in special service schools. The Technicians' School at Camp Grant was directed to conduct an eight weeks course in meat and dairy hygiene for enlisted personnel of the Army Air Forces.

The inspection of foods of animal origin was not only to protect the health of the troops, but also to insure that foods met Federal specifications and contract requirements as to grade, type, and quality. Inspections were made both at the point of origin, which provided many economies, and upon delivery, during storage, and when foods were moved or issued to troops.

During the first three quarters of the calendar year 1942 the Army Veterinary Corps inspected nearly two billion pounds of food of animal origin (of which nearly 100 million pounds were purchased for, or diverted to the Navy, Marine Corps and other agencies). Of this amount, nearly 131,000,-

000 pounds were rejected because of failure to meet contract provisions on type, class, or grade; while 14,500,000 pounds were rejected because of their unsound or insanitary condition. This was an increase of more than 200 percent over the amount inspected during the calendar year 1941. When all figures for the fourth quarter of the calendar year 1942 were compiled, it was estimated that the total amount of food products inspected during the year would total about 3.2 billion pounds.

Inspection at the point of origin increased each month. Such inspections reduced the number of rejections at destination; minimized the difficulty of replacement and saved transportation and other expenses.

The procurement of adequate amounts of milk of suitable type became difficult late in the summer of 1942. Many large camps were distant from areas producing large quantities of milk of suitable grade. A heavily-taxed transportation system, including an acute shortage of truck transportation, shortage of critical items, scarcity of skilled and unskilled labor contributed to the problem. The regular inspection of dairy farms, placing emphasis on improved cleanliness and better sanitation rather than on new construction, conserved critical war materials and increased the supply of milk.

The sickness admission rate for horses and mules during the year was 668 per 1,000, and the daily non-effective rate averaged 39 per 1,000. The infection rate was very low. Equine encephalomyelitis, one of the most serious of all diseases of horses and mules in the United States, was again completely excluded from Army animals as a result of the vaccination program. While the rate for this disease among civilian animals was considerably less than in previous years, about 5,000 cases were reported from 35 states, with a mortality rate of 25 percent.

For the fourth consecutive year Army animals were vaccinated with vaccine prepared at the Army Veterinary Schools. During this period only one case of equine encephalomyelitis occurred among Army animals, and that one was caused by a different virus.

Veterinary laboratory service was conducted at the Army Veterinary School, at each of the Service Command laboratories, and in various overseas laboratory installations. The Front Royal Remount Depot conducted research on equine diseases, notably influenza and its complications, periodic ophthalmia, and on breeding problems. The laboratory at the Army Veterinary School, in addition to its research program, produced large quantities of vaccine, diagnostic agents, and other biological products for the Veterinary Service. The laboratory service also made bacteriological and chemical analyses of meat and dairy products to determine their fitness for human consumption and to ascertain the degree to which they complied with Federal specifications and contract requirements.

Nurses

On December 22, 1942, Congress provided that during the present war and for six months thereafter, Army nurses should have relative rank and receive the same pay and allowances as officers. Promotions were made commensurate with the needs of the service. A new table of allotments pro-



Hospital Ship, *Acadia*.

vided for a greater number of Chief Nurses at various hospitals and other medical installations than formerly.

The age limit for appointment as Reserve Nurse was raised to 45 years. Regulations were changed to permit the appointment of married nurses on the same basis as single nurses, provided that they did not have dependent children whose care would interfere with the full performance of their military duties. This provision was later changed to include nurses with dependent children under 14 years of age. The retention of those who married while in the service decreased the number of discharges.

A new procedure for nurse procurement was set up, closely coordinating the work of the Red Cross, Officer Procurement Service, and the Service Commands. The evaluation of applicants' credentials was handled entirely by the Red Cross Nursing Service. To assist in recruiting, members of the Corps were assigned to the Service Commands. Educational work, by radio, press, and moving pictures, was undertaken to expedite procurement.

A systematic program for the training of student nurses in Army hospitals was made effective under the Act of Congress approved June 15, 1943. Under this law, student nurses in their senior year might elect to complete their last six months of training in Army, other Federal, or civilian hospitals. Upon successful completion of the course, they returned to their home schools for graduation. After registering, they were available for service wherever they might be needed in military, Federal, or essential civilian institutions. About 1,500 students could be accommodated each six months in Army hospitals. It was estimated that this would release 1,200 graduate registered nurses for other assignments.

Psychiatric training was offered 12 nurses every two months at Lawson General Hospital. Upon completion of the course, these nurses served as supervisors of psychiatric services in the hospitals to which they were assigned. Corresponding training in anaesthesia for nurses was set up in certain general hospitals.

Hospitals

New hospitalization provided during the fiscal year was, for the most part, of the cantonment type. In order that the hospitals constructed might be available for other uses in the future, the President on March 31, 1943, directed that all recommendations for hospital construction of more than 150 beds be approved in turn by the Federal Board of Hospitalization, the Bureau of the Budget, and the President.

Hospitalization needs at station hospitals were based on four percent of troops strengths. General hospitals were provided for one percent of the total strength of the Army, plus the bed needs of patients evacuated from overseas, estimated as an additional 0.7 percent of overseas strength.

On July 1, 1942 there were 15 general hospitals in the United States with a normal capacity of nearly 15,000 beds. By the end of the fiscal year, there were 39 general hospitals open and receiving patients with a bed capacity of about 54,000. In addition, 16 general hospitals, with a capacity of almost

27,000 beds, were under construction. Of these, seven were expected to open in July, August, and September with a total of nearly 12,000 beds.

On July 1, 1942, there were 264 station hospitals in the United States with 82,000 beds. At the end of the year there were about 500 station hospitals with a capacity of 220,000 beds.

The actual construction, maintenance, and repair of Army hospitals was a responsibility of the Corps of Engineers, while supervision of the program from the medical standpoint was a function of the Surgeon General. Hospital sites were carefully chosen and a few conversions of hotels undertaken.

The rapid emergency construction of many cantonment-type hospitals brought diverse problems. The shrinkage of green lumber tore the tar-paper roofs, resulting in leaks. Similarly, floors constructed of such materials were difficult to maintain properly. These defects, however, were promptly remedied. Among the recent improvements at several hospitals was the air-conditioning of operating rooms, recovery wards, and X-ray dark rooms.

The program for hospitalization of members of the Women's Army Auxiliary Corps, for prisoners of war, for the retraining of convalescent patients in general hospitals was being rushed to completion at the end of the year.

The bed-credit system, authorized in June 1941, worked well. Bed credits in named general hospitals were allotted to the commanding generals of Service Commands, to the Commanding General of Army Air Forces, to commanding generals of ports of embarkation, and to the general hospitals concerned. Patients might then be transferred to beds allotted in named general hospitals without reference to higher authority. Posts not having bed credits allotted by the Surgeon General obtained them from the commanding general of their Service Command. In this manner the transfer of patients was coordinated and controlled. The advantages of the bed credit system became apparent also when many patients had to be evacuated from the West and East Coasts to the interior.

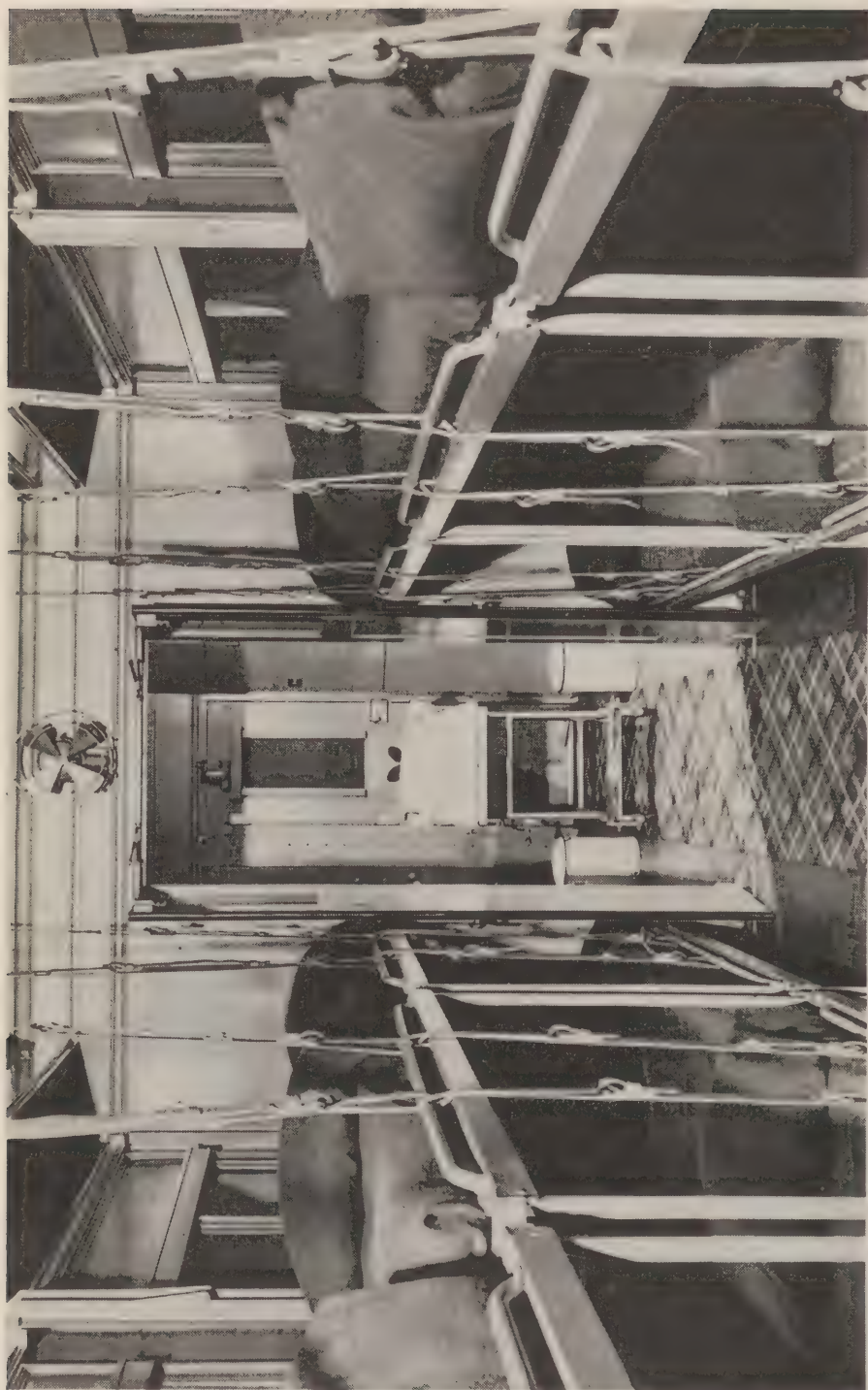
From August, 1942, to June 30, 1943, nearly 27,000 patients were transferred between general hospitals; and nearly 28,000 patients were evacuated from overseas to the United States.

Toward the end of the year certain named general hospitals were designated for the specialized treatment of selected types of medical and surgical cases.

Plans for hospital ships and for hospitalization on transports were given special consideration during the year. Ward cars were provided for hospital trains. Standard chair-cars were converted by the installation of folding, double-decked beds and two side doors for the loading of patients. Three of these cars, with a small dressing room at the end of one of them, were required for a complete hospital train, the other cars being of the standard railroad type. Two hospital ships were in service on June 30, 1943, and 24 were authorized. On the same date, 23 hospital trains were in the service and 40 were authorized.

Miscellaneous

During the fiscal year 1943 an agreement was made between the Surgeon General and the Director General, Medical Service, Canada, whereby military



Ward Car with dressing room.

personnel of either government might be treated in military hospitals of the other without charge except for subsistence of officers and unusual expenses. Another agreement was made between the Secretary of War and the Secretary of the Navy whereby personnel of either service might be treated without charge in hospitals of the other service outside the United States. These agreements, operative for the duration of the war and six months thereafter, greatly simplified the cumbersome bookkeeping systems formerly involved in the hospitalization of military personnel.

In addition, an agreement was made with the United States Employees' Compensation Commission whereby much of the detail formerly required by the Commission in connection with accounts for the out-patient treatment of its beneficiaries by Army agencies was eliminated, thus saving much time and labor in the presentation of reimbursement charges. The volume of such accounts was increased enormously by the Army Industrial Hygiene Program at Army-owned and operated plants. The introduction of simplified accounting measures in connection with these three agreements greatly reduced necessary clerical personnel and space requirements.

XIII

COMMUNICATIONS AND PHOTOGRAPHIC ACTIVITY

The communications system operated by the Army Service Forces included all modern methods for the transmission and receipt of messages. The Army Radio Network consisted of a central radio station near Washington, other stations at Headquarters, Army Service Forces, and major stations overseas. Within these areas were subordinate radio networks. The Army Full Period Telephone Network of leased telephone circuits of the most modern design provided uncongested channels of communication between the higher commanders in Washington and major commanders in the field. The Army Administrative Network Teletypewriter System linked the War Department in Washington with those Army offices in the United States having the heaviest requirements. Telegraphic communication within the United States and cable communication overseas was provided over leased or government lines.

In Washington the War Department communications center was operated by the Chief Signal Officer. Within the continental United States communications facilities were operated by the Service Commands under standards fixed by the Chief Signal Officer. In addition to its operation, the construction, installation, and maintenance of the communications system were Army Service Forces responsibilities. On January 25, 1943, the Army Communications Board was established to coordinate communications procedures and operations of the Army of the United States. It formulated communications policies which were submitted to the Chief of Staff. The President of the Board was the Chief Signal Officer. The other members of the Board were appointed by the Chief of Staff of the War Department upon recommendation by the Commanding Generals of Army Ground Forces, Army Air Forces, and Army Service Forces.

The task of supplying communication facilities along various routes throughout the world meant introducing modern means of conveying messages to regions where only primitive methods had been employed. Remote radio stations tying in hundreds of strategic locations with major and more important centers either were completed or were in process of completion at the close of the fiscal year. Submarine cable communication was provided in the Aleutian Islands, along the coast of North and South America, and in the Mediterranean.

Uninterrupted communications service was provided the War Department with all commanders of overseas theaters and with the representatives of other government departments. At the end of the fiscal year 1942 the War Department Signal Center was handling approximately 8,000 messages a day. At the end of the fiscal year 1943 it was handling an average of 32,000 messages a day. The same upward trend characterized the receipt and dispatch of coded communications.

With the arrival of soldiers in large numbers overseas the Army Service Forces undertook to provide them with a communications service to and from relatives and friends in the United States at a cost which would not impose any hardship. By the end of the fiscal year 1943 virtually every American soldier in foreign service except at a few remote places could make use of the Expeditionary Force Message Service to transmit a fixed text message at a uniform rate of 60 cents.

Every day, daily news digests were transmitted to practically every point in the world where United States soldiers were stationed. Telephoto equipment was introduced to transmit photographs, maps, charts, and other material by wire or radio channels. Transmission points were opened in the United States and overseas. The number of such points increased from 100 in July, 1942, to 750 in June, 1943.

During the year the use of radio-type as a device for transmitting type-written communications over radio channels was expanded from an experimental to a standard operation. Radio-type apparatus, operated at speeds as high as 100 to 110 words per minute, set up communications in the form, spacing, and text exactly reproducing the original typed copy. It became the first and only mechanical arrangement authorized for unlimited use in the transmission of classified communications. Radio-type installations operating over both wire and radio circuits were projected for construction in many different parts of the world.

A separate plant engineering agency was set up by the Chief Signal Officer on January 23, 1943, to provide for the maintenance of the communications networks. The maintenance cost of the network aggregated over \$300,-000,000 during the fiscal year 1943, an increase of 200 percent over the previous year.

Communications systems for seacoast defense fire control were installed by the Army Service Forces for operation and routine maintenance by the Defense Commands. The Army Airways Communications System was likewise installed by Army Service Forces. During the fiscal year 1943 some major projects for 30 distinct harbor defenses serving some 150 seacoast defense batteries were under construction. Each system meant the installation of a complete and fully integrated communications network with an average coverage of approximately 100 miles of coastline. The harbor defense systems by June 30, 1943, involved about 100 switchboard installations, an extensive cable plant, and 6,000 telephones. By the end of the year this system was approximately 100 miles of coastline. New stations in the Army Airways Communications System were installed within and outside the United States.

Complete station equipment for approximately 1,600 radio stations was issued during the year. A number of overseas centers received 40 kilowatt transmitters.

One of the outstanding accomplishments of the year was the construction of a telephone line over the Alcan Highway linking the War Department in Washington directly with the Northwest Service Command, and eventually with Alaska. This line when completed will run a distance of 2,000 miles

from Edmonton, Alberta, to Fairbanks, Alaska, and will carry simultaneously three forms of messages—local, telegraphic, and radio. By the close of the fiscal year 1943 a 449-mile line between Edmonton and Dawson Creek, and a 1,378-mile line from Edmonton to Whitehorse, Yukon Territory, had been completed and put into operation. On each of the physical wire circuits there were superimposed carrier systems providing five additional telephone circuits and 12 telegraph channels. The Alcan line carried radio messages by a special transmitter. Low frequency waves went out over the wire rather than through the air. More than one radio message and more than one telegraph message might go over the wire at the same time and still not interfere with the vocal interchange. When completed, this line will be the longest carrier-equipped system in the world.

Temperatures at 50 degrees below zero were commonplace during the construction of the Dawson-Whitehorse section of the line. The earth had to be blasted in order to sink telephone poles. At many places poles were erected in 3 to 5 feet of snow. The worst snow storm in 40 years hit Edmonton during construction of the first section. But even greater difficulties were encountered during the spring thaws. As the temperature rose, the snow and ice melted rapidly and turned the ground into quagmires. Tripod construction of poles was necessary in order to keep them standing in the muskeg. Notwithstanding these difficulties, men fought the wilderness, the mud, the snow, and the weather to inch the line through.

Special efforts were devoted during the year to improving security of the transmission of all types of messages. Personnel of the commercial communication carriers were investigated and the removal of certain individuals requested. Cryptographic teams were trained and dispatched to various installations. A radio telephone monitoring service was started in August, 1942. Monitors warned users that they would be talking over a radio circuit and that their words might be heard by an enemy. They then listened in on the conversation and broke the circuit whenever users seemed likely to divulge information of value to the enemy.

Photographic Activities

On September 20, 1942, the Signal Corps Photographic Center was dedicated at Astoria, Long Island City, New York. Originally constructed in 1920 by Famous Players-Lasky Corporation, this studio became the center of Signal Corps photographic activities. All training film production work formerly located at Fort Monmouth was transferred to the new center. Laboratory activities and distribution functions were later concentrated there.

The Signal Corps Photographic Center and its western branch office located at Hollywood was responsible for the production of all training films and for special features for the Army Ground Forces and the Army Service Forces. The production of training films for the Army Air Forces was turned over to the training film production laboratory at Wright Field.

An Army Pictorial Board was created by War Department memorandum on March 15, 1943, presided over by the Assistant Chief of Staff for Supply

of the War Department General Staff, and made up of representatives from the Army Air Forces, Army Ground Forces, and Army Service Forces. This Board laid down the general policies for training and other film production by the War Department. It determined priorities in the preparation of films and divided film resources among the various commands.

On March 19, 1943, the Army Pictorial Division in the Office of the Chief Signal Officer was renamed the Army Pictorial Service. From that date until June 30, 1943, the head of the Service reported directly to the Commanding General of the Army Service Forces on all policy questions. Film needs of the Army Service Forces were determined by the Director of Military Training and by the Director of the Special Service Division and presented to the Director of the Army Pictorial Service. The latter represented the Commanding General, Army Service Forces on the Army Pictorial Board. On June 30, 1943, the Director was instructed to report to the Commanding General through the Chief Signal Officer.

A major improvement in the production of training films was achieved during the year by a clearer definition of the respective responsibility of the service sponsoring a film and the Army Pictorial Service as producer. The sponsoring service was expected to provide technical assistance and guidance at all times during the production. The process of preparing and approving scripts was also simplified and speeded up. Both steps helped to increase the output of training films.

During the fiscal year some 150 training films were produced by the Army Pictorial Service. A report on the North African landing was prepared and released. A special film depicting the activities of the Army Service Forces was produced. Arrangements were made for the production every two weeks of a special two-reel film magazine for the Special Service Division of Army Service Forces. Other special films were produced for showing to military personnel.

A foreign film section was set up during the fiscal year to exchange training films with other nations and to rescore War Department training films for Latin American countries and China. By the end of the fiscal year 100 titles had been completed in Spanish, 84 in Chinese, and 78 in Portuguese. Preparations were also made to rescore films in Russian, Turkish, and French. All British training films were reviewed and prints obtained for those needed by the War Department.

More than 300,000 feet of film strips for training work were prepared during the year.

In November, 1942, the Signal Corps became responsible for purchasing all photographic equipment and supplies to be used by the War Department except that purchased by Army Air Forces. Since photographic equipment and film were controlled by the War Production Board, the Signal Corps reviewed all requests from Service Commands in order to make sure that demands were kept to a minimum. During the year equipment was provided approximately 100 posts and Service Command laboratories.

Training film distribution was developed into a systematic and standardized pattern during the year. Responsibility for film distribution was decen-

tralized to Service Commands. Some 250 film libraries were set up at major Army installations throughout the United States. The number of training films distributed by the Signal Corps increased from 365 on July 1, 1942, to 551 on June 30, 1943. The number of film strip subjects increased during the fiscal year from 359 to 619. Approximately 135,000 16mm. prints and 4,000 35mm. prints of training films were made available to film libraries at home and overseas.

A standard procedure for film distribution was presented to representatives of Service Commanders at a meeting in Toledo, Ohio, on May 28-29, 1943. A special officer was assigned to the staff of each Service Commander to supervise the administration of film libraries at posts, camps, and stations. Suggestions were presented to Service Commanders about inventory control of film stock, the housing of film libraries, the administration of projection equipment, and other procedures in film distribution.

During the fiscal year 6 Signal photographic companies were activated and special units were sent to the Southwest Pacific, China, Alaska, Newfoundland, England, North Africa, and other locations. By the end of the year nearly three-quarters of a million feet of film had been received from overseas. A Board of Review was set up representing Air Forces, Ground Forces, Service Forces, the Navy, the Marine Corps, and other interested agencies to review this overseas photography. An electrically controlled panel board was developed whereby each one of the 20 members of the Review Board was able during the showing of these films to record his choice of scenes.

During the fiscal year 1943, 28,000 negatives of still shots were added to the official files of the Signal Corps library. Many of these shots came from overseas theaters.

By the end of the year there were 14 V-mail stations in operation throughout the world. Eight of these stations were operated by the Eastman Kodak Company under government contract. The other six stations were operated by Signal Corps units.

XIV

CONSTRUCTION

At the beginning of the fiscal year 1943 the war construction program as then planned amounted to about 8 billion dollars. Some 35 percent of this program was then completed; the value of work in place was 57 percent of the program. By June 30, 1943, the total war construction program had increased to 11 billion dollars, of which 83 percent was completed and 95 percent was in place.

In a single year the value of work in place increased by 4.9 billion dollars—an all time construction record for the United States. By the end of the year construction activity was declining rapidly, with the prospect of only a small amount of construction work to be done during the remainder of the war.

During the fiscal year major emphasis was given to the completion of airfields, ground troop camps including hospitals, and munitions plants.

Construction work was performed at 682 Army Air Forces installations within the United States. The work included runways, troop facilities, hangars and other buildings, and operating facilities. Civil Aeronautics Administration and municipal air fields were converted to military use. Flight and technical training schools were built for the Army Air Forces and hospitals were provided by the conversion of hotels.

During the year new housing was provided for approximately 1,350,000 troops, including facilities for 86,000 members of the Women's Army Auxiliary Corps. Relocation camps were built for 214,000 internees; prisoner-of-war camps with a capacity of 140,000 persons were provided, and general hospitals having a capacity of 46,500 beds were constructed.

One hundred and five plants for the manufacture of munitions were completed in 1943 and turned over to the Ordnance Department and the Chemical Warfare Service.

The loading capacity of government-owned shell loading plants was doubled and bomb loading capacity was increased six times. The capacity of small arms ammunition plants was doubled.

A major construction problem was encountered in building a new gun plant for the centrifugal casting of gun barrels at Watertown Arsenal. This was the first plant of its kind to be constructed. A unique problem in ventilation and cooling was faced because of the hot climate in which the building took place. The problem was solved without power or compressor cooling equipment and the construction was so successful that the facilities were completed for operation on schedule and production started without any rejection of the first guns cast.

The program for the construction of explosives plants changed rapidly after December 7, 1942. The plants that were already started were completed with great speed. As these plants came into operation it was evident that their capacities would be double their original estimates. In the fall of 1942 the greater urgency for completing other programs within the United States—

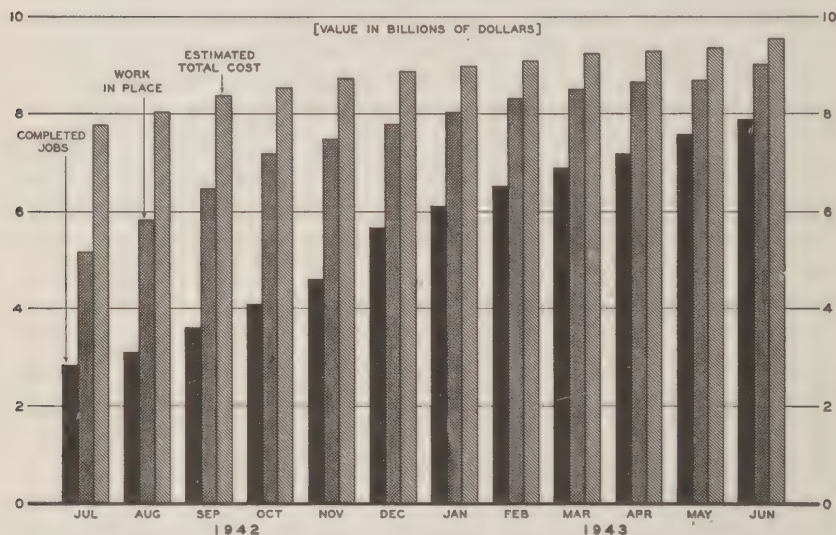
such as those for providing escort vessels, synthetic rubber, and high octane gasoline requiring great quantities of valves, instruments, and other equipment—led the War Department to postpone completion of certain explosives plants. The effect of this delay was offset by the high output of the completed plants.

Twenty-seven plants were constructed for the manufacture of toxic gases and other Chemical Warfare products. Three of these plants alone covered 80,000 acres.

The passive protection program for war plants engaged in essential pro-

CHART 56

PROGRESS OF WAR CONSTRUCTION PROGRAM FISCAL YEAR 1943



duction amounted to 34½ million dollars on July 1, 1942. Only 5½ million dollars of this program was then in place. This work increased to an estimated total cost of 49 million dollars during the year, of which \$33,500,000 was completed by June 30, 1943. Because of the improved military situation and the need for conserving manpower and materials, the program was curtailed in March, 1943. Further construction was limited to certain specific facilities and to the completion of work previously authorized.

In collaboration with the National Housing Agency the Chief of Engineers surveyed War Department establishments to determine the need for additional housing facilities to take care of civilian employees. As a result of the needs thus established, the Corps of Engineers constructed 64,206 units during the year to accommodate an estimated 65,300 civilian war workers. Of the total, 61,132 units were of the dormitory type, and the remainder were two person and family units. These dwellings were built with funds made available by the National Housing Agency.

The program for the construction of major caliber seacoast batteries and

to modernize existing structures progressed rapidly during the year. About 85 percent of the total program was completed on June 30, 1943.

The Corps of Engineers certified over 400 essential access roads running from existing highway networks to military establishments or defense industries as necessary for construction. The building of these roads was undertaken from approximately \$50,000,000 of funds appropriated to the Public Works Administration. Approximately 500 strategic and other necessary road projects at an estimated cost of \$100,000,000 were approved by the War Department, constructed from funds appropriated to the Public Roads Administration.

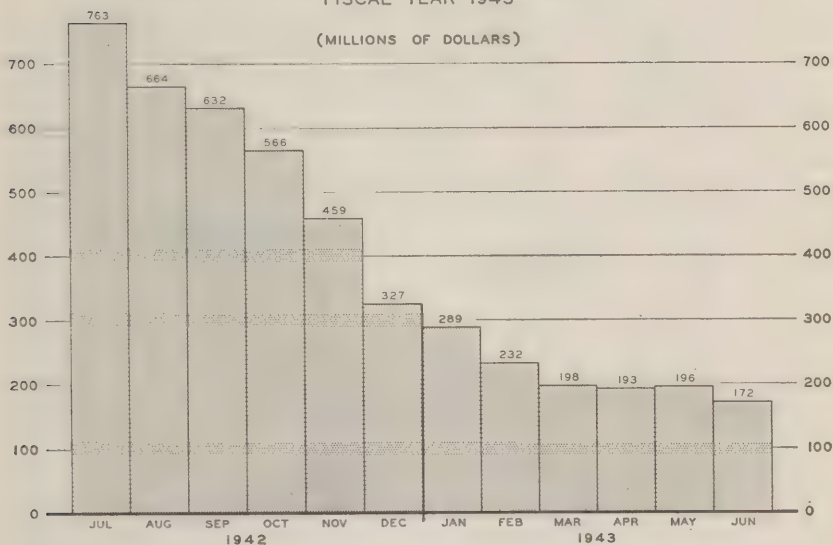
The construction project to attract the most attention during the year was probably the Alcan Highway. Extending 1,623 miles from Dawson Creek, Canada, to Fairbanks, Alaska, the pioneer road for this highway was

CHART 57

VALUE OF CONSTRUCTION—CONTINENTAL U. S.

FISCAL YEAR 1943

(MILLIONS OF DOLLARS)



completed by the Corps of Engineers on November 22, 1942. It was started the previous March 1. Ten thousand soldiers divided into 7 Army Engineer regiments, and 2,000 civilian workmen under the direction of Public Roads Administration completed the job. The road was pushed forward at the rate of 8 miles a day, 24 feet wide from ditch to ditch. Some 200 streams had to be bridged and at the highest point the road rose to an altitude of over 4,200 feet. The road was put into immediate operation in the winter of 1942-1943 hauling supplies.

Construction of a two-lane, all-weather gravel road was in the hands of contractors of the Public Roads Administration, working under the direction of the Corps of Engineers. This road was scheduled for completion in December, 1943.

CHART 58

DISTRIBUTION OF ALL CONSTRUCTION WORK



The Pan-American Highway, stretching 1,200 miles from the Guatemala, Mexican border to David, Panama, continued under construction during the year. About 30 percent of the all-weather pioneer road was constructed during the fiscal year 1943. The entire project was scheduled for completion in accordance with military standards during the fiscal year 1944.

Total value of all war construction work in place on June 30, 1943, was about 9½ billion dollars. This included work done by the Chief of Engineers outside the continental limits of the United States. Of this completed program, the single largest component was made up of industrial facilities. Air forces and ground forces installations were about the same, each accounting for about 2½ billion of the total. Storage and shipping facilities came to a little less than one billion dollars. The remaining \$600,000,000 included defense command construction, passive protection, and facilities built outside the United States.

Design Developments

Operated under the "Directive for Wartime Construction" issued jointly by the War and Navy Departments and the War Production Board on May 20, 1942, the Corps of Engineers made many changes in the scope and nature of the construction work undertaken in order to conserve critical materials and manpower and to expedite war construction.

All construction was of the simplest type possible. For each one million dollars value of cantonment construction the savings realized during the fiscal year were substantial. Substitutions for such critical materials as steel sheeting, steel pipe, copper flashing and wiring, stainless steel and cast iron were developed during the year.

Structural designs using substitute materials were developed as a part of the conservation program. Cold storage buildings with a capacity for a week's supply of food for 10,000 men, 15,000 men, and 30,000 men were designed entirely out of wood. Wood igloo magazines for underground ammunition storage were designed to replace the critical materials formerly used. Standardized designs for the construction of elevated pre-stressed concrete water storage tanks with capacities from 250,000 to one million gallons were developed as substitutes for tanks made of steel plate. Standardized plans for sewage treatment plants were designed for construction almost entirely of wood and non-reinforced concrete.

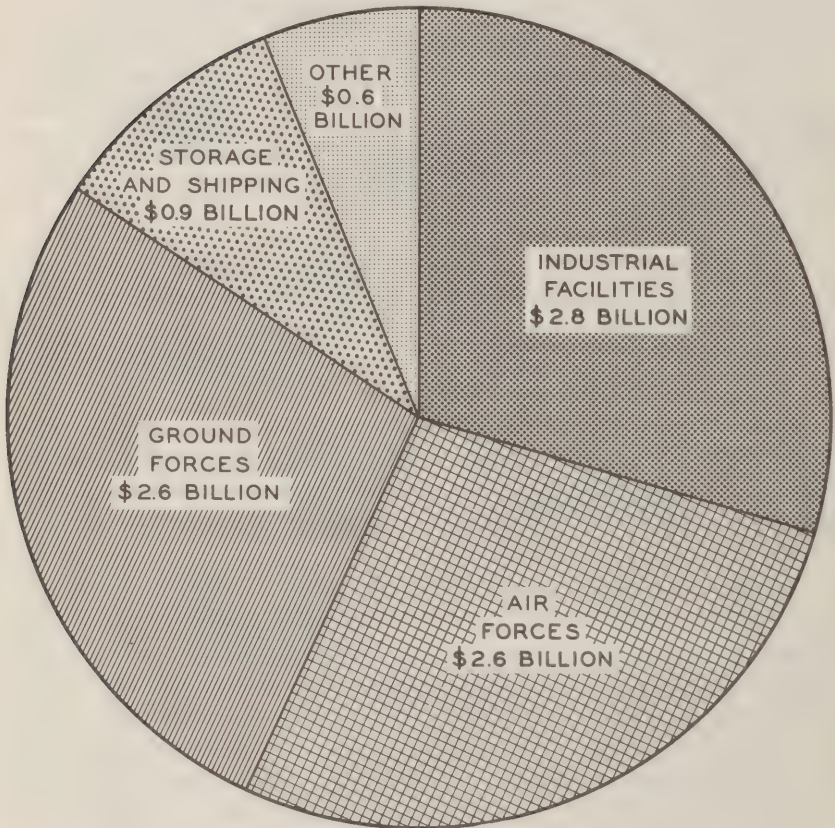
As extensive studies and investigations were made and new design criteria established, the *Engineering Manual* was revised to present the latest standards and design criteria. This manual contained 25 chapters, each dealing with a specific phase of engineering requirements. In addition to the revisions of the *Engineering Manual*, 275 specifications for construction of facilities in theaters of operations were revised to reflect the result of the year's research and experimentation.

New types of facilities had to be developed to meet special needs as they arose. A disinfection building was developed for use at ports of embarkation and elsewhere; an abbreviated type of nose and wing hangar was designed in cooperation with the Army Air Forces; and plans for specially designed

CHART 59

VALUE OF CONSTRUCTION IN PLACE
BY TYPE OF FACILITY

30 JUNE 1943



bakeries, messing buildings, dry cleaning plants and lavatories for tent camps were perfected. Reinforced concrete storage tanks for above and below ground storage of aviation gasoline were also developed.

Standard drawings of 12 types of ranges—bayonet, grenade, obstacle courses, gas chambers, and target repair houses—were approved by Army Ground Forces for construction.

Studies and tests were continued during the year to develop bases for the rational design of protectional structures and seacoast fortifications to resist the effects of bombs. A 5-man pre-fabricated arctic shelter capable of being transferred either by airplane or dog sled was developed. This shelter could resist a wind velocity of 250 miles an hour or a cover of 30 feet of snow.

Two types of pier designs were developed during the year—one for wood and one for steel piles intended to meet varying conditions at ports of debarkation overseas.

One change in construction practice during the year moved from temporary construction to more permanent type construction. At the beginning of the year cantonment type general hospitals of one-story frame were being erected. These required wide spacing of buildings and covered an extensive area. In some cases the exterior walls were built of tile or cement block. During the year masonry buildings, for the most part one story high, were substituted for frame buildings permitting closer spacing and a very considerable reduction in total area requirements. With the formation of the Federal Hospitalization Board in the spring of 1943 and the decision that certain Army hospitals would ultimately become Veteran Administration facilities, permanent wood buildings were planned as a part of Army general hospitals. These buildings were to have from two to three stories and to be of permanent construction.

Real Estate

Expanding requirements of the Army during the fiscal year 1943 meant selecting many new sites for construction purposes. Locations were chosen for three new division camps, 12 field training camps, 10 specialized training centers and 32 new general hospitals.

The volume of real estate acquired in fee simple for military purposes by the War Department during the fiscal year amounted to 5,260,000 acres. This increased the total amount of land acquired since July 1, 1940, to 18,435,000 acres. Approximately two-thirds of the total land acquired during the three years was public domain or government-owned land transferred to the War Department. Only one-third was privately owned. Some 9,000 leases were executed during the fiscal year. The War Department leased privately owned property rather than purchased it unless the land was to become the site of permanent or semi-permanent construction.

Land acquisition procedure was streamlined under the terms of the War Powers Act and further improvements were realized by decentralizing activities to division engineers in the field. The elimination of flight hazards in areas surrounding air fields was accompanied by purchasing or condemning Easements for Aviation, an entirely new property right. Privately owned grazing rights in public domain lands were suspended by Act of Congress approved on July 9, 1943. Privately owned mineral rights in public domains were eliminated. The procedures developed in the leasing of hotels, hospitals, and other special facilities involved new problems in the appraisal, acquisition, and disposal of property.

The problems of real estate management required increasing attention during the year. In cooperation with the Department of Agriculture the War Department took steps to make land acquired for military purposes available to farmers and range operators for growing foodstuffs or grazing cattle. During the fiscal year approximately 135,000 acres of land were so leased, producing an annual income of approximately \$350,000.

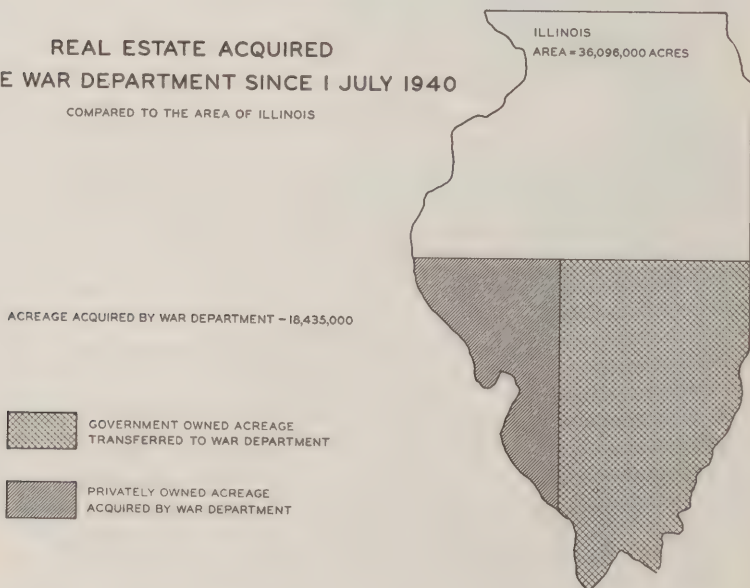
The Purchase of Construction Materials and Equipment

In general, the problems of procuring construction materials and equipment for the war construction program were less serious during the fiscal year 1943 than they were in the fiscal year 1942. In part, this resulted from the close working relationships developed with the War Production Board and in part from the elimination of critical materials from the construction program.

The use of substitute materials and the elimination of all but essentials of war construction made possible considerable redistribution of materials and equipment among projects. Between January 1, 1943, and May 31, 1943,

CHART 60

**REAL ESTATE ACQUIRED
BY THE WAR DEPARTMENT SINCE 1 JULY 1940**
COMPARED TO THE AREA OF ILLINOIS



some 25,000 pieces of equipment with an estimated value of \$56,000,000 were transferred from one construction project to another, or to another war work. The careful salvaging of scrap materials also produced considerable savings in construction materials.

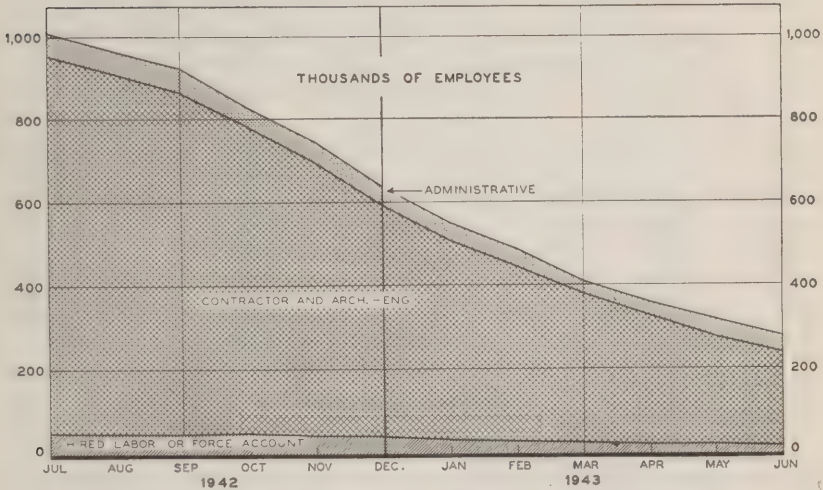
During the fiscal year 1943 the Chief of Engineers became the central procurement agency of the Federal Government for the purchase of lumber. Over $5\frac{3}{4}$ billion board feet were purchased at a value of \$285,000,000. The Corps of Engineers also purchased over 28,000,000 feet of rail for installation at Army posts. This would have been sufficient to build a single track railroad from New York City to Phoenix, Arizona. The cost of all types of building materials other than lumber purchased during the year amounted to some \$96,000,000. The Chief of Engineers purchased all equipment for installation at projects constructed by War Department contractors.

Labor Supply and Relations

The rapid completion of major portions of the Army construction program in the United States and the employment of troops for certain types of construction abroad lessened the problem of labor supply. Construction labor declined from a high of approximately 950,000 in July, 1942, to an estimated 250,000 in June, 1943.

Frequent shortages of such skilled workers as electricians, plumbers, steam-fitters and welders were experienced during the first six months of the fiscal year. Through a vigorous recruiting program, the extension of the work-week, and the cooperation of union offices and the United States Employment Service, the over-all progress of work was not impeded. Because of industry's insatiable demands for labor at higher salaries and the increasing require-

CHART 61
EMPLOYMENT
WAR CONSTRUCTION PROGRAM



ments of the Army, shortages in common labor were experienced with increasing frequency. Women could not replace men in the construction industry as they could in other industries because of the nature of the work. In military construction where the migration of labor to projects was necessary, the "freezing" of labor proved to be a handicap in obtaining workers.

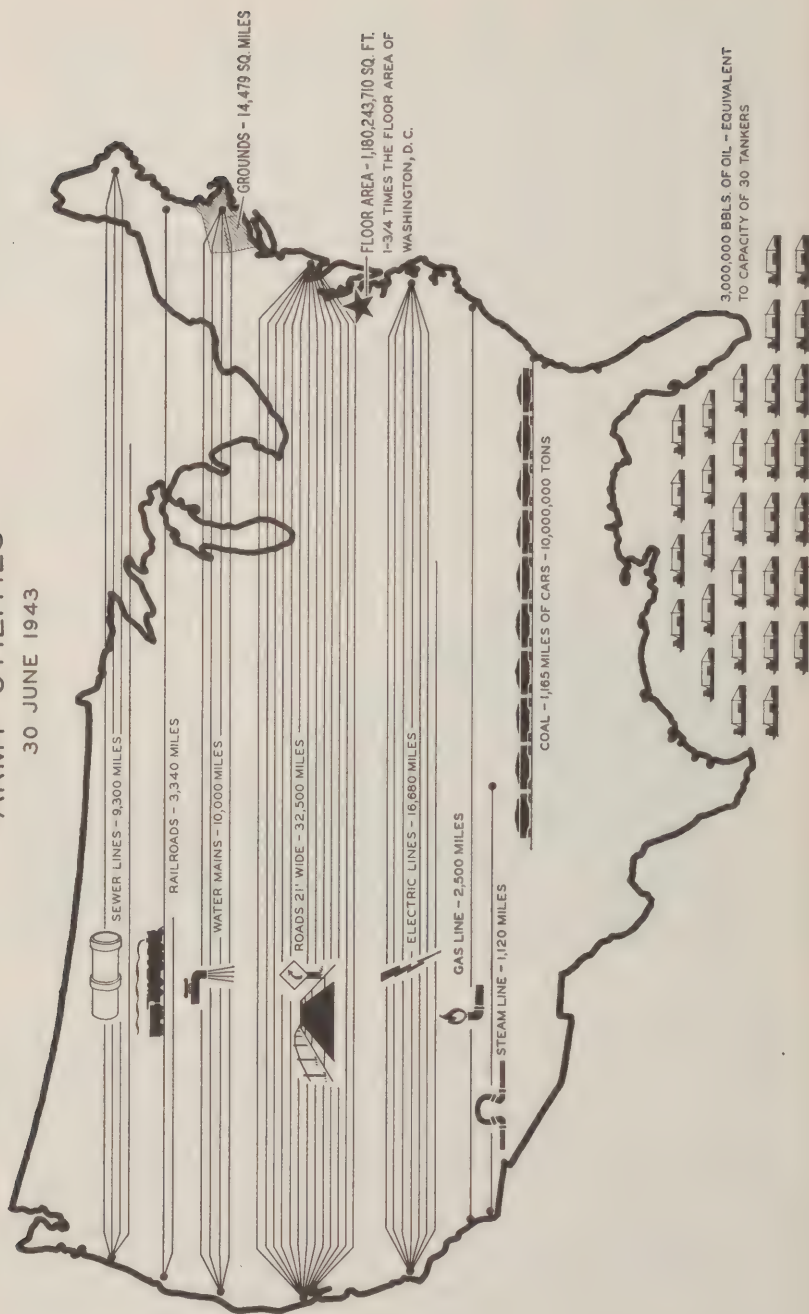
Labor relations on construction projects were generally good during the year. A total of 273 such stoppages developed, resulting in a total loss of 45,256 man-days during the year. Compared with a total of 187,000,000 man-days worked, only two-hundredths of one percent (.02%) of man-days were lost, and no substantial delays in progress resulted.

Employees on construction projects were protected from accident by a positive program of safety and accident prevention. The accident frequency rate was reduced 55 percent below that for the fiscal year 1942.

CHART 62

ARMY UTILITIES

30 JUNE 1943



To prevent disloyal or dishonest acts by any person connected with the War Construction Program under the Chief of Engineers, a program of protective security was effected in cooperation with the Office of the Inspector General, the Office of the Provost Marshal General, the Military Intelligence Service, and the Federal Bureau of Investigation. About 430 individual reports and over 1,000 summaries of information from the field projects have been processed. Investigations were made of 27 major cases, and appropriate action was taken.

Repairs and Utilities

Fire prevention, operation of utilities, and the maintenance and repair at posts, camps, and stations were performed by the Army Service Forces through its Service Commands.

As of June 30, 1943, this responsibility extended to 621 posts, camps, and stations, 411 subposts, and 3,505 outposts. During the year, the scope of repair and utility work increased two and one-half times over that for 1942. Obligations amounted to \$190,216,139 for 1942 and \$497,730,974 for 1943—inclusive of maintenance and utilities for leased facilities. The increase reflected the acceptance of responsibility for Class III stations (airfields) and Class IV installations such as proving grounds and manufacturing plants. And as the construction program was completed, maintenance became more and more important.

The Army Service Forces had extensive facilities to keep in operating condition. The grounds to be kept in grass would cover the states of Massachusetts, Connecticut, and Rhode Island. The refrigerator space was equivalent to a building 10 feet high, 20 feet wide, and 23½ miles long. The electricity used by the Army in a year at its installations amounted to 2.3 billion kilowatt hours, sufficient to light the metropolitan area of Washington, D. C., for one year and nine months. The 500 billion cubic feet of gas used a year would have met the needs of the Washington area three and three-fourths times. The water used by the Army, 180 billion gallons, would have provided the Washington area with its needs for four years. And Army per capita consumption of water was only half the rate of civilian consumption. The size of other facilities to be maintained is illustrated on the accompanying map.

During the fiscal year a number of improvements were introduced in the administration of repairs and utilities. Operating procedures for property accounts, reports, and the interchange of surplus stock were simplified. An Information Exchange Program to bring methods successful in one Service Command to the attention of other Service Commands was instituted. Administrative decisions were condensed in a "policy file" for general use by all offices. The issue on April 10, 1943, of a stringent wartime construction and maintenance directive, designed to standardize procedures, promised to result in the saving of millions of dollars. An Equipment Manual and a Repairs and Utilities Manual were issued for similar ends.

Several methods were employed to effect greater efficiency and economy in operating and maintaining utilities and repairs. Improved practices in paint-

ing, roof repair, waste disposal methods, and waterway erosion control brought a saving of approximately \$44,000,000. A high speed airfield mowing machine cutting a swath 21½ feet wide at speeds up to 20 miles per hour was developed. To extinguish serious fires hitherto almost uncontrollable, especially those following crashes of heavy and medium bombers, 100 new type crash trucks were ordered, capable of transporting three tons of liquid carbon dioxide in a refrigerated tank at low pressure and discharging it as a gas through specially designed nozzles. In addition to 4,371 fire and crash trucks of more conventional design already in use, 100 trucks were purchased carrying 1,000 gallons of water for discharge at 600 pounds pressure as water, fog, or foam through turrets and hand lines.

Electric lines were increased from 9,470 to 21,420 miles. By renegotiating utility rate contracts, a saving of approximately \$2,000,000 was effected.

The development of a "Fuel Computer" facilitated the scientific calculation of fuel requirements. The design of an economizer for use with coal-fired heating stoves increased heating efficiency more than 50 percent. Some \$5,000,000 was saved by training enlisted firemen and instituting an inspector mechanic system for maintaining domestic heating plants. Conservation in Army use of water reduced per capita water consumption from 102 to 69.8 gallons per day. This not only meant a saving of \$4,600,000, but also reduced the construction entailed in providing an adequate water supply. Fire prevention activities reduced fire loss in the year to \$1.53 per capita, about one-half that experienced in civilian life.

XV

FISCAL SERVICES

The budgetary reforms introduced during the fiscal year 1942 were continued in the year ending June 30, 1943. In the Appropriation Act for the Military Establishment for the fiscal year 1944 as presented to the House of Representatives on May 20, 1943, and as passed by Congress, there were 29 appropriation items. The previous act had 28 items, less than half the number in former acts. The reduction in the number of projects was also continued, and provided as great a saving in accounting activity and personnel as had been expected.

The long-range planning of military activity and military procurement was reflected in the budgetary planning of the War Department. The attack on Pearl Harbor on December 7, 1941, and the subsequent declaration of war against the United States by Germany and Italy changed War Department plans from a defensive to an offensive character. The necessary adjustments in programs were reflected in the passage by Congress of six supplementary and two deficiency appropriations, aggregating 65 billion dollars, in addition to the regular appropriation for the fiscal year 1942 that was passed in June, 1941.

For the fiscal year 1943 the Army Service Forces estimated with as much care as was possible the funds required for the plans then made. The Appropriation Act approved on July 2, 1942, totaled some 42 billion dollars. During the course of the fiscal year only two supplementary and one deficiency appropriation had to be requested, all for minor sums coming to a total of one million dollars. The action of Congress in approving in one act the sums needed for the entire year made it unnecessary for the Army Service Forces to prepare extensive supplementary budgets and supporting data.

The same practice was followed in planning the budget for the fiscal year 1944. Financial requirements for the entire year were estimated and presented in a single measure totaling over 59 billion dollars. In addition, authorization to spend 12 billion dollars of expiring funds from previous appropriations was also requested. These sums were made available in an Appropriation Act approved July 1, 1943.

How each dollar of Army funds was expended is shown in the accompanying chart. Of these items, finance services represented primarily pay to military personnel.

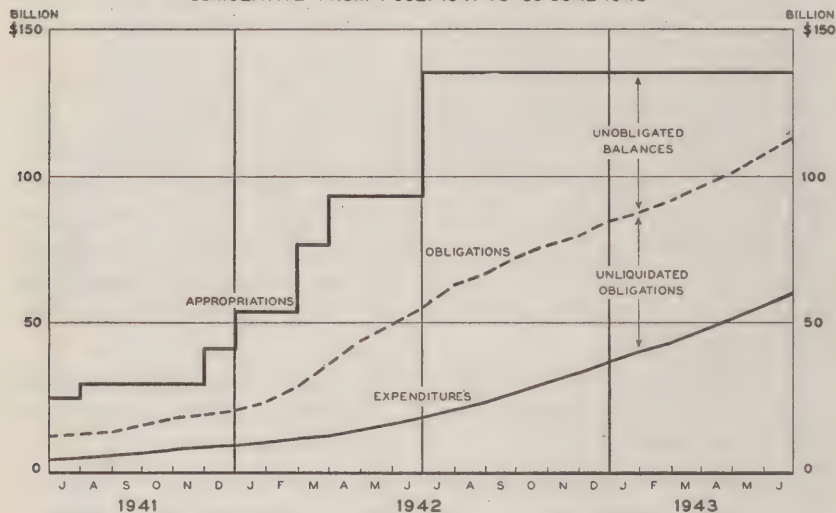
By the end of the fiscal year 1943 a total of 123½ billion dollars had been appropriated to the War Department since July 1, 1941. Some 103 billion dollars of this was for procurement, the remainder representing non-procurement and working funds. Total commitments of funds by June 30, 1943, amounted to over 112 billion dollars, while actual obligations were over 106 billion dollars. Obligations were expected to equal appropriations by June 30, 1944.

Budget and accounting procedures were simplified further during the fiscal year 1943, in order to reduce the volume of work involved in handling the immense sums available to the War Department. Standardization in accounting terminology was effected during the year, enabling the Technical Services to submit comparable reports on the status of all project funds. Manuals were also issued to guide fiscal offices in various services and commands in the obligation of funds.

CHART 63

STATUS OF MILITARY FUNDS

CUMULATIVE FROM 1 JULY 1941 TO 30 JUNE 1943



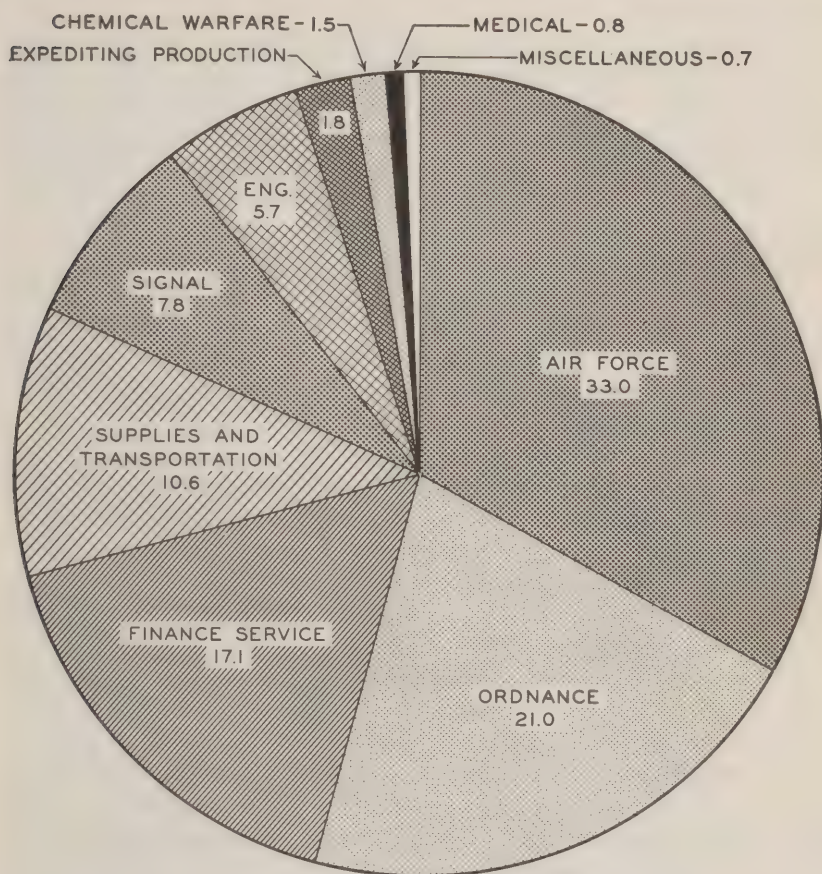
In addition to collecting budget estimates and watching over commitments to carry out military plans, the Army Service Forces disbursed all funds within the United States and arranged for the transfer of funds overseas. When bills for the delivery of military supplies and equipment were presented to the procuring office, vouchers authorizing payment were prepared and sent to the nearest Finance Office, United States Army. Here the checks were written. At the same offices checks were written for the payment of all officer personnel, as well as civilian personnel. Money was also provided to camps for the payment of enlisted personnel. Overseas finance offices performed the same work for units stationed outside the United States.

By June 30, 1943, there were some 790 finance offices scattered throughout the world, compared with about half that number at the end of the preceding year. Actual disbursements for the fiscal year came to somewhat more than 43 billion dollars, compared with 14 billion dollars in the fiscal year 1942. In the one month of March, 1943, finance offices received over 2 million disbursement vouchers, a volume four times as great as that for the month of December, 1941.

Every effort was made to pay accounts as rapidly as possible. For the United States as a whole, finance offices during June, 1943, paid 75 percent

CHART 64

EXPENDITURE OF THE ARMY'S DOLLAR



of the total commercial invoices on hand at the first of the month and received during the month. Less than 5 percent of the commercial invoices in the hands of the Army Service Forces on June 30, 1943, had been held for more than 60 days. And every commercial invoice had to be accompanied by a voucher, purchase order, and receiving report certified to by the appropriate officials.

Transportation bills to all common carriers were paid from a single office, the Transportation Division of the Finance Office, U. S. Army, Washington, D. C. While the number of such payments increased, the time taken to pay them declined. At the beginning of the fiscal year the oldest unpaid bills had been in the office 34 days; by June 30, 1943, the oldest unpaid bills were 11 days old.

During the year four regional accounting offices were established in New York City, Atlanta, Chicago, and Los Angeles. The accounts of all finance offices were received and examined in one of these regional offices. It was

hoped to arrange for the General Accounting Office to audit War Department accounts in these offices rather than to return all vouchers to Washington. The Army Service Forces itself adopted the principle of selective audit to examine the accuracy with which accounts were being kept.

In the fiscal year 1942 a payroll reservation plan was developed by the War Department whereby both civilian and military personnel might authorize a withholding of any desired sum each month for the purchase of war bonds in any desired denomination. The number of applications received exceeded original estimates, and at the same time the plan proved complicated to administer. Payroll deduction records had to be kept centrally for every single person, military and civilian, participating in the plan. By June 30, 1942, nearly \$1,000,000 had been received and no bonds had been issued.

In July, 1942, over \$3,000,000 was received and no bonds were issued. By December 31, 1942, more than \$18,000,000 were on hand, while bonds amounting only to \$1,800,000 had been issued. It was necessary to change the original plan in order to relieve the increasing delay in issuing bonds to War Department personnel.

Effective December 31, 1942, the original plan of payroll deduction was terminated for all civilian employees. It was replaced by a revised pay reservation plan whereby records of payroll deductions for each civilian employee were kept by officers certifying the civilian payroll. The Finance Office wrote checks for the amount called for on the payroll, from which the bond purchase amount had already been deducted. The certifying officer then submitted separate schedules of deductions for bond purchase, according to which the local disbursing office issued bonds. By June 30, 1943, bonds worth 78.3 percent of all funds received under this plan had been issued by the Finance Office, U. S. Army, Washington, D. C. In the month of June the value of bonds issued was 123 percent of the funds collected. This meant that in a short space of time the issue of bonds would be as current as possible. Bonds were actually delivered to civilian employees through the certifying officer. The results of decentralization in handling payroll deductions in one Finance Office—the one in Washington—were indicative of those obtained throughout the United States.

A second system was put into effect for the purchase of bonds by military personnel. The original plan for military personnel was terminated on March 31, 1943. An Army War Bond Office was set up in Washington, D. C., and moved to Chicago in May. Under the new plan enlisted men and officers authorize deduction of one of eleven sums ranging from \$3.75 to \$375 per month from their pay. When an authorization was received by the War Bond Office it automatically delivered the appropriate bond at regular intervals without waiting for any actual transfer of funds from a finance office to it. Consolidated transfers of withheld amounts followed periodically. No finance office would change an authorization received from military personnel until notification of the desired change was acknowledged by the War Bond Office.

By June 30, 1943, the War Bond Office had received 2,276,199 authorizations for the purchase of bonds from military personnel of which 2,205,409

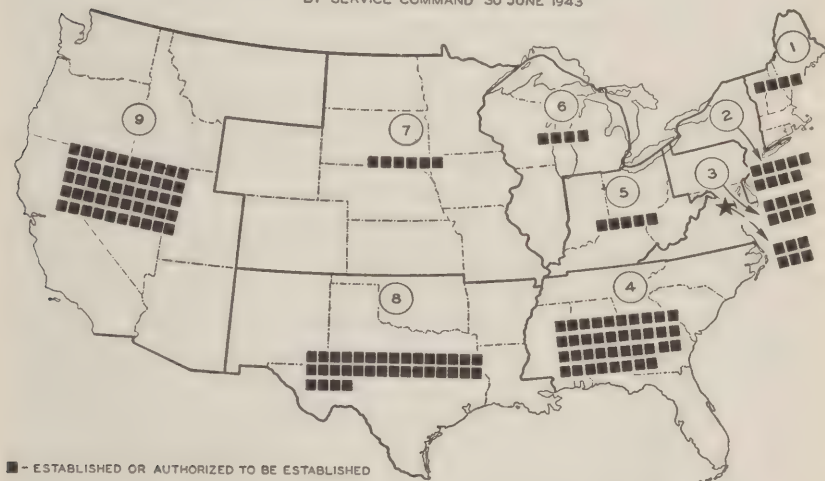
were effective. The value of authorizations effective on June 30, 1943, amounted to over 23 million dollars. The issuance of bonds under this scheme was prompt. The plan proved efficient in operation.

Under Executive Order No. 9112, March 26, 1942, the War Department might guarantee a loan to a war contractor made by a financing institution. Before the loan could be made, the War Department had to find it necessary, appropriate, or convenient to the prosecution of the war. The Federal Reserve Banks, as fiscal agents of the United States, executed guarantee loan agreements on behalf of the War Department. Approval of loans was

CHART 65

BANKING FACILITIES AT POSTS CAMPS AND STATIONS

BY SERVICE COMMAND 30 JUNE 1943



handled by the Fiscal Director in Headquarters, Army Service Forces. By June 30, 1943, loan guarantees totaling 4 billion dollars had been authorized. Guarantees had been issued for over 3 billion dollars, and the amount actually outstanding was less than one billion dollars.

By February, 1943, nearly 2,000 guaranteed loans had been executed. Some 260 companies had received guaranteed loans in excess of one million dollars. The largest single loan was one for one billion dollars. In only three Federal Reserve Districts in February, 1943, did the guaranteed loans average more than one million dollars; in the other nine districts the average loans ranged from \$154,595 to \$677,024.

By June 30, 1943, the War Department had made advanced payments to contractors totaling $4\frac{1}{4}$ billion dollars, of which less than 2 billion dollars was outstanding.

During the fiscal year the Army Service Forces cooperated with the Treasury Department in arranging for banking facilities at various Army posts which were only inadequately served. Commercial banks invited to establish banking services at a post were designated by the Treasury Department as depositaries and financial agents of the United States Government. Post

commanders then furnished adequate quarters for doing business, military guards, vaults, light, heat, and janitor service. The bank in turn cashed checks of military and civilian personnel without charge and provided other banking service. By June 30, 1943, banking facilities had been authorized at 164 camps.

In April, 1943, facilities were established whereby military personnel overseas might transfer funds to the United States through disbursing officers. Instructions on transfer were transmitted by radio. The messages were received and payments made to designated payees in the United States by Finance Offices, U. S. Army, located at Jersey City and at San Francisco. Similar arrangements were made for the cash purchase and delivery of war bonds. In the two months of April and June, 1943, some 900 messages were received by these offices covering transfers of about 7 million dollars to 65,000 payees, and some 3,000 bond purchases were made amounting to over \$200,000.

Disbursing officers in December, 1942, were authorized to cash U. S. Treasury checks and Postal money orders, to exchange United States currency for certain foreign currencies, and to exchange certain foreign currencies for the money of other designated nations. These services were begun for the direct benefit of military personnel, especially those overseas.

Finance officers for assignment to troop units and overseas were trained by the Army Service Forces at a Finance Replacement Training Center at Ft. Harrison, Indiana, and at an Army Finance School located at Duke University. The Army Finance School was moved from Ft. Harrison to Duke University in August, 1942. It consisted of an Officer Candidate School and an Officers' course. A non-commissioned officers' section was created at Wake Forrest College in North Carolina. In the fiscal year 280 officers graduated from the Army Finance School, some 1,000 officers were commissioned from the Officer Candidate School, 1,500 enlisted men were trained at the enlisted section of the Army Finance School, and 6,800 enlisted men were trained at the Replacement Training Center.

XVI

ADMINISTRATIVE SERVICES

Legal

The Judge Advocate General on the staff of the Commanding General, Army Service Forces, directed the performance of legal activities for the War Department. He advised various elements of the Army Service Forces and of the War Department in the handling of legal matters, handled litigation involving the War Department, and supervised the system of military justice.

In cooperation with the Navy Department the Office of the Judge Advocate General prepared legislation for consideration by Congress compelling reduction of excessive royalties for Government use of patent inventions. This legislation was enacted in October, 1942, and its enforcement contributed to a reduction in procurement costs of the War Department. The Office assisted the State Department, the Justice Department, and the Navy Department in drafting an agreement between the United States and Great Britain which was signed in August, 1942, for the interchange of patent rights and information about designs and manufacturing processes of importance to war procurement. During the year the Office of the Judge Advocate General received thousands of royalty free licenses donated to the Government for use by holders of patents eager to assist the war effort. The Office also prepared and filed applications for patents and copyrights submitted by military and civilian personnel of the War Department. A number of suits charging infringement of patents were defended during the year in cooperation with the Justice Department.

The Judge Advocate General was custodian of title records to War Department land. Opinions were prepared during the year on the subjects of condemnation proceedings, the assumption of exclusive federal jurisdiction over land, the relocation of roads and utilities, the delegation by the Secretary of War of the power to grant rights on United States lands, the use of toll bridges and other facilities by military personnel and vehicles, and requirements for prescribing military areas.

During the fiscal year 1943 the Judge Advocate General perfected arrangements with the American Bar Association for the establishment of a legal assistance office at each Army post in the United States. The plan was put into effect in March, 1943. These offices provided free legal advice and assistance to military personnel in the handling of their personal affairs, including such matters as the preparation of wills and powers of attorney, rights under the Soldiers and Sailors Civil Relief Act of 1940, domestic relations, and business interests. The legal assistance offices were staffed by Army officers with legal training and by volunteer civilian lawyers from neighboring communities. The entire system of legal assistance operated under the general supervision of the Judge Advocate General.

The system of handling claims against the War Department was reorgan-

ized during the fiscal year 1943. Prior to December 31, 1942, the administrative settlement of claims was managed by the Chief of Finance. Requests for opinions on legal questions arising in settlements were sent to the Judge Advocate General in from 20 to 25 percent of the cases handled. In January and February, 1943, the supervision of the administrative settlement of claims was transferred to the Judge Advocate General. At the same time the entire system was decentralized. Prior to that time accidents and other events likely to give rights to claims against the Government were investigated by an officer in the field, and his findings reviewed by a board of three, followed by a second review in Washington. Under the new system investigations were made by a permanently detailed claims officer at large Army installations. The only review of his findings was performed by the Judge Advocate of the Service Command. Supervision of the operation of this system was vested in the Judge Advocate General, who was given responsibility for preparing reports to Congress on bills for private relief.

Representatives of the Judge Advocate General conducted negotiations with state taxing authorities throughout the country in order to eliminate or minimize state sales taxes on government contracts, use taxes on gasoline purchased by the United States, and profit taxes on bank accounts representing advance payments to government contractors. The Office also arranged certain exemptions of government contractors from Federal excise taxes, as well as exemptions for Army Exchanges and commissaries from the Federal Retailers Excise Tax. Amendments were drafted to the Soldiers and Sailors Civil Relief Act of 1940 prohibiting multiple state taxation of military personnel. Legislation was enacted during the year freeing shipments of cigarettes for the use of Army personnel in Hawaii and Alaska from taxation.

Construction and procurement activities in foreign territories presented a number of peculiar problems concerning the application of such restrictive legislation as the Trading with the Enemy Act, statutory prohibition upon cost-plus-a-percentage-of-cost contracts, limitations upon cost-plus-a-fixed-fee contracts, and legislation requiring renegotiation of contracts. The Judge Advocate General held that for the most part these restrictions did not apply to procurement in foreign areas. This construction of the law was sustained by an opinion of the Attorney General issued in November, 1942.

In August, 1942, the War Department Board of Contract Appeals was established to decide controversies between the War Department and government contractors. The Judge Advocate General represented the interests of the War Department before this Board. He also provided personnel for legal work involved in the seizure and operation of industrial plants by the War Department.

During the year problems of martial law and military government in foreign areas became increasingly important. The Judge Advocate General rendered a number of advisory opinions about military government in Hawaii and about problems arising from occupation of foreign territories by American troops. The Judge Advocate General also rendered opinions about the Hague and Geneva Conventions and the rules of land warfare, the treat-

ment of prisoners of war and civilian internees, and the status of persons serving with the Armies of the United States in the field.

Early in the fiscal year 1943 the Judge Advocate General joined with the Attorney General in the prosecution of eight foreign saboteurs before a military commission especially created to try the case. The jurisdiction of this military commission was successfully defended by the Attorney General of the United States and the Judge Advocate General before the United States Supreme Court.

The volume of litigation handled by the Judge Advocate General in civil courts during the fiscal year 1943 was about ten times the volume of such work in the preceding year. The Office of the Judge Advocate General furnished evidence and prepared briefs in 42 important habeas corpus cases involving military personnel, and collaborated with the Department of Justice in defending all attacks upon the validity of the Selective Training and Service Act of 1940. A number of suits brought against the Secretary of War, the Chief of Finance, the Surgeon General, and Commanding Generals of Service Commands were successfully defended. During the year 194 cases were heard in the Court of Claims and another 145 cases involving claims by the United States were heard in other courts. Admiralty cases involving large amounts of money were investigated and briefs prepared. Much work was done in negotiating settlements of government claims in bankruptcy proceedings. The Office of the Judge Advocate General also assisted the Department of Justice in some 51 fraud cases involving millions of dollars, and in litigation involving loans guaranteed by the War Department. Nearly 1,000 administrative procedures involving rates and services of carriers were handled during the year.

During the fiscal year 1943 more than 15,000 persons were tried by general courts martial. Over 14,500 of the accused were enlisted men and another 750 were officers. All sentences to death, dismissal, or dishonorable discharge not suspended, and penitentiary confinement were forwarded to the Judge Advocate General before order of execution was entered. The records of these trials were examined by a board of review and by the Judge Advocate General himself. The records of all other trials by general courts martial were examined by the Military Justice Division in the Office of the Judge Advocate General, and if serious doubts about their legal sufficiency appeared, were referred to a board of review. The Judge Advocate General also considered the advisability of extending clemency in cases of conviction.

The extension of military operations to distant theaters led to the establishment of branch offices of the Judge Advocate General in Europe, Africa, Australia, and India. Each of these offices was headed by an Assistant Judge Advocate General and a board of review having authority to handle all cases of general courts martial arising in their area. Three boards of review were necessary in the Office of the Judge Advocate General to handle cases arising within the United States.

During the fiscal year 1943 the Judge Advocate General assisted in the adoption of the policy of confining certain military offenders in rehabilitation

centers rather than in penitentiaries and in disciplinary barracks in order to salvage all available military manpower.

During the year the Office of the Judge Advocate General continued to prepare and publish manuals and digests to assist all the Judge Advocates of the Army. A supplement to military laws of the United States containing the military legislation of the 76th and the 77th Congresses was prepared in the spring of 1943. A series of pamphlets entitled Military Reservations, containing complete data on the title to and jurisdiction over United States Military Reservations, were completed. The monthly bulletin of the Judge Advocate General was continued during the year, presenting opinions and digests of the Judge Advocate General, the Attorney General, the Comptroller General, and the civil courts, together with notes on military justice and other legal materials. This publication was of considerable value in providing field installations with current information about legal developments and in assisting them in avoiding errors. Manuals on military government, the rules of land warfare, and the use of the Army in domestic disturbances were revised and published during the year.

At the beginning of the fiscal year 1943 the active strength of the Judge Advocate General's Department was 771 officers. By June, 1943, this number had risen to some 1,200 officers, of whom about 200 were on duty in the Office of the Judge Advocate General. The expansion was realized by commissioning outstanding civilians as Captains and Majors and by the appointment of enlisted men as Lieutenants. An Officer Candidate School for the Judge Advocate General's Department was created during the year and began operations on June 6, 1943. All future expansion of the department was to be met from this school.

The Judge Advocate General's School, including the Officer Candidate School, was located at the University of Michigan which made available the quarters, messing facilities, offices, and classrooms of the law quadrangle. The school was moved to Ann Arbor in September, 1942, from its previous location at the National University in Washington, D. C. The faculty at the end of the year consisted of 16 officers and a student body of 125. The courses in the school lasted ten weeks. The Officer Candidate School had a 12-week course and graduated about 75 officers every six weeks.

Police

The Office of the Provost Marshal General, Army Service Forces, was the police arm of the War Department. It directed the training of personnel to police the Army throughout the world, trained administrators for occupied territories, supervised internal security arrangements, and directed the handling of prisoners of war.

The Provost Marshal General directed the enforcement of the Geneva Prisoner of War Convention of 1929. By June 30, 1943, 55 internment camps had been constructed within the United States and 14 were under construction. Thirty-four camps were occupied by prisoners of war. In the construction of internment camps, priority was given to areas in which agricultural labor was needed. To rationalize the use of prisoner of war

labor as permitted by the Geneva Convention, the War Manpower Commission agreed to report to the War Department those industries on which labor shortages were most acute.

A Prisoner of War Information Bureau was set up by the Provost Marshal General to keep vital data about our own and enemy prisoners of war. Article 77 of the Geneva Convention provided that within the shortest possible period each of the belligerent powers should report to information bureau every capture made by its Armies. These reports were to contain all possible identifying information, and to permit immediate transmission of such information to the families of captured men. In accordance with the Convention, The Prisoner of War Information Bureau furnished to enemy governments, through the Central Committee of the International Red Cross at Geneva, information which included the full name, rank, date and place of birth, serial number, and location of each prisoner. It received identical information on American prisoners of war in the hands of the enemy. The Bureau also received from Geneva the names of American dead discovered on the field of battle and transmitted to Geneva like information on enemy dead.

Reports of visits and inspections of prisoner of war camps made by representatives of the International Red Cross, the neutral government representing our interests, and the Y. M. C. A. were received by the Prisoner of War Information Bureau. Data were collected about the type of quarters, sleeping, bathing and sanitary conditions, food, mail, pay, work, religion and recreation, and the general welfare and treatment of American prisoners of war. On the basis of these reports it was determined whether there was substantial compliance with the terms of the Geneva Convention.

Information received by the Bureau regarding prisoners of war and civilian internees was transmitted to The Adjutant General for military personnel, to the Bureau of Naval Personnel for naval personnel, to the Marine Corps for Marine Corps personnel, to the War Shipping Administration for members of the Merchant Marine, to the War Department Director of Civilian Personnel for civilian employees of the government, to the Navy Bureau of Yards and Docks for civilian naval contractors' employees, and to the State Department and Office of the High Commissioner of the Philippines for other civilian personnel.

The Bureau advised next of kin how mail might be sent, and every 60 days issued parcel and tobacco labels to next of kin, together with instructions about their use. Next of kin were also kept advised by the Bureau of any change in a prisoner's condition. Announcement of death, however, was made by the original notifying agency.

A separate information bureau was set up during the year to handle data about interned enemy aliens. The Office of the Provost Marshal General supervised investigative activities performed by the Service Commands. This program covered investigations to determine the loyalty of the following classes of civilians: (a) applicants for employment in military establishments where there was access to classified material; (b) applicants for the WAAC; (c) applicants for the Enlisted Reserve; (d) civilian employees and

applicants for employment in war production plants; (e) civilians employed by the American Red Cross, on development contracts of the Office of Scientific Research and Development, and on other special work; and (f) alien applicants for employment on classified and aeronautical contracts.

During the fiscal year 1943, approximately 950,000 loyalty investigations were begun and 900,000 completed. Some 71,000 aliens were approved and 2,165 aliens were disapproved for work on aeronautical and classified contracts. Eight hundred and thirteen persons were determined to be subversive and were removed from war work. Investigations were conducted by specially trained sergeant investigators and by approved commercial investigative agencies to which routine cases were assigned.

In January, 1943, the Provost Marshal General was directed to supervise the investigation of the loyalty of 37,000 Japanese-Americans in War Relocation Centers for the purpose of determining their suitability for induction into the armed forces or employability in the war effort.

The internal security responsibility of the Army Service Forces included the protection of facilities important to the prosecution of the war, the development of fire protection and safety programs, and the clearance of official visitors to important facilities. During the fiscal year special attention was given to improving field fire inspectional personnel. Training courses for inspectors were developed at the Armour Institute in Chicago and at the Massachusetts Institute of Technology. In October, 1942, the Provost Marshal's Fire Prevention Advisory Council was appointed to assist in the development of this program.

In August, 1942, the Provost Marshal General was assigned supervision of the accident prevention program. In the course of the succeeding months, a broad educational program was conducted. Standardized reports were received from approximately 10,000 facilities monthly. A minimum safety program was published in pamphlet form to serve as a guide in organizing or judging safety programs. Six safety posters were distributed, with an average distribution of 100,000 copies. The War Department Safety Council, organized in December, 1942, held monthly meetings with the Technical Services, and one meeting with cooperating civilian agencies.

Considerable progress was made in simplifying the system for the control of individual visitors to war plants. Methods of identification of visitors were standardized. Voluminous reports by war plants on American citizens were eliminated.

On July 2, 1942, the Secretary of War ordered that civilian guards at all plants important to the war effort be organized, trained, and commanded as Auxiliary Military Police. About 190,000 guards at 11,000 plants were thus militarized.

Military police were stationed on all through trains in the United States during the year to supervise the conduct of soldiers and sailors. This action did much to eliminate complaints about the behavior of commissioned personnel. Service Commands also used military police to supplement the police force in various towns and cities near military posts.

The School of Military Government at Charlottesville, Virginia, continued

to function during the fiscal year 1943 under the command of the Provost Marshal General. This school trained officers in grades of captain to colonel for top administrative jobs in occupied territories. Approximately 350 officers were trained during the year. In addition, the Provost Marshal General was authorized in November, 1942, to commission from civil life 2,500 persons for training and ultimate duty in occupied areas. Specialists and subordinate administrative personnel received four weeks of training at Fort Custer, Michigan, and thereafter twelve weeks of training at one of six civilian universities: Harvard, Yale, Pittsburgh, Michigan, Chicago, and Stanford. These groups were made up of specialist officers ranging in grade from first lieutenant to major.

Instruction in military government and occupational police duty was provided for junior commissioned personnel and for enlisted personnel at Fort Custer, Michigan. About 500 officers and 500 enlisted men were trained in the period January 1 to June 30, 1943.

All training activities under the supervision of the Provost Marshal General were centralized at Fort Custer during the fiscal year. A total of 142 military police units of all kinds, including escort guard companies and prisoner of war processing companies, were trained there from January 1 to June 30, 1943.

By the end of the year the Corps of Military Police had expanded to 7,000 officers and 182,000 enlisted men.

Army Exchanges

The number of post exchanges in the United States grew from 333 to 741 during the fiscal year 1943. There were an additional 6,000 outlets to the main exchanges. The dollar volume of sales at exchanges in June, 1943, was 150 percent greater than sales in July, 1942. Based upon military strength, per capita purchases at exchanges amounted to \$14.05 in June, 1943.

During the fiscal year 1943 the number of exchanges in overseas areas grew from 50 to 109.

During the fiscal year a number of retail associations complained to Congress about the activities of post exchanges. These complaints were based on the assumptions that:

1. The annual volume of exchange business was between a billion and three billion dollars, and increasing at an alarming rate;
2. Sales were being made by exchanges to unauthorized civilians;
3. Authorized civilians were buying scarce goods and creating stock piles for themselves, their families, and their friends;
4. Military personnel and civilians were purchasing scarce items and re-selling them at a profit;
5. The exchange system was an effort by the government to start a vast retail empire built on a cooperative basis to be continued after the war;
6. Retailers in towns near Army posts were losing business because of exchange competition;

CHART 66

DOLLAR VOLUME OF PURCHASES AT ARMY EXCHANGES IN THE U.S.

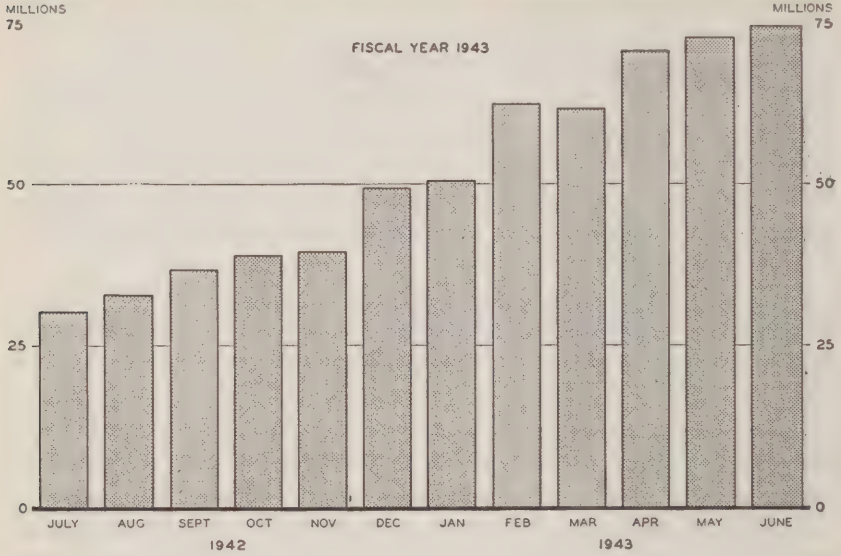
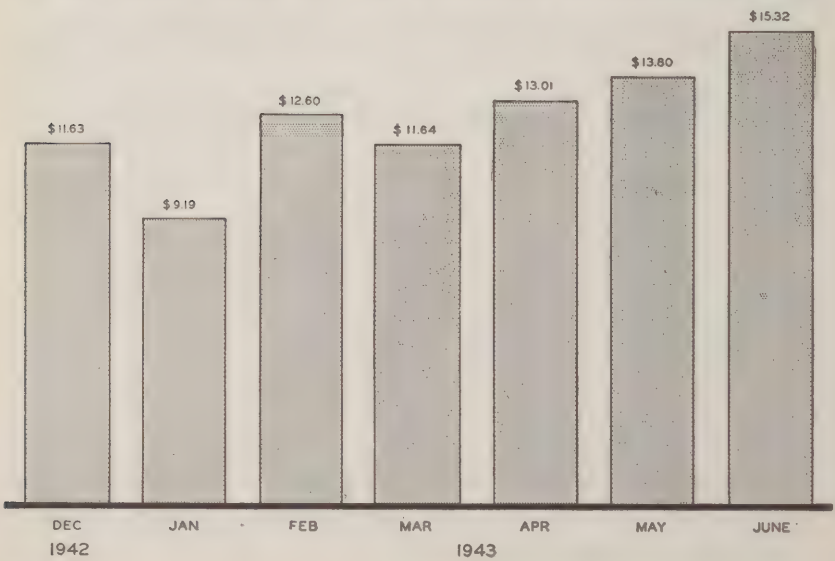


CHART 67

PER CAPITA PURCHASES AT ARMY EXCHANGES IN CONTINENTAL U. S.



7. Exchange officers were trying to increase the volume of business through promotional methods;
8. Exchanges, by using priorities, were buying scarce goods that retailers could not obtain, and were building large stock piles;
9. Exchanges were selling items other than those of ordinary use, wear, and consumption;
10. Special order privileges were being used for the purchase of such items as pianos, fur coats, furniture, refrigerators, and other large items.

A further complaint was that overseas exchanges were ordering all their merchandise from the United States instead of obtaining a large proportion of their stocks from local purchase.

The Army Exchange Service in Headquarters, Army Service Forces, immediately took steps to correct any evils that might exist in the functioning of post exchanges. In the first place, Army Regulations were changed to restrict further the sale of goods to civilians. In general, only those civilians employed at a military post might purchase at an exchange, and they might buy only such items as food, drink, and tobacco products for their own consumption on the post. Another step was to eliminate all credit sales. In the third place, the use of A-10 priority in the purchase of goods by local exchanges was limited to procurement of soft drinks, ice cream, candy, chewing gum, essential toilet articles, and equipment cleaning materials. The use of a priority for the purchase of any other items required prior approval from the Army Exchange Service. Special orders to purchase items not carried in stock were issued only for military personnel and for items of military necessity. The sale of candy, chewing gum, and cigars was limited. Steps were also taken to warn all customers of post exchanges against the resale of any articles.

The Chief of the Army Exchange Service spoke at meetings of two large retail associations during the year explaining the corrective steps that had been taken to eliminate any actual abuses in post exchange activities. At the same time he emphasized that a great many accusations were not based on fact and that any specific complaints presented to the Army Exchange Service would be thoroughly investigated.

On March 16 and 17, 1943, the United States Senate Business Committee to Study and Survey Problems of Small Business Enterprises held hearings on Army post exchanges. At this time the representatives of retail associations which previously had criticized post exchanges said that any evils that might have existed had been cleared up, and that the operation of post exchanges was not a threat to the retail business of the United States. The Committee found no fault with the administration of post exchanges.

The Army Exchange Service in Headquarters, Army Service Forces, continued in 1943 to offer various services to assist in the operation of post exchanges at Army posts. A conference of chiefs of exchange branches in Service Commands was held in October, 1942, to discuss general policies in the operation of post exchanges. Another meeting was held in June, 1943, at which particular attention was given to future problems.

Over 1,400 price agreements were negotiated in the fiscal year. A total of 706 such agreements was in effect on June 30, 1943. Post exchanges purchased supplies under these agreements at stipulated prices. In many cases, particularly for the smaller exchanges, goods were thus obtained at lower prices than would have otherwise been charged. In May, 1943, the price agreements were made available also to Navy Ship's Stores in the same manner in which they were available to post exchanges. In addition, the Army Exchange Service began to negotiate price agreements for items of particular interest to Navy personnel, such as black ties and black hose.

Army Exchange Service buying officers during the course of the year located suppliers of scarce items in order to insure adequate sources of supply for post exchanges. Frequent trips were made to various parts of the country in order to find these suppliers.

Allocations of such equipment as adding machines, cash registers, and files among post exchanges were handled by the Army Exchange Service. Arrangements were made with the War Production Board and the Office of the Petroleum Administrator for War for the Army Exchange Service to present applications for essential materials needed to install gasoline service stations. Arrangements were also made whereby post exchanges could obtain tires for exchange vehicles.

Insurance rates for post exchanges were reduced on an average of 33-1/3 percent by the negotiation of a new rate classification for all post exchanges. The total annual saving of post exchanges within the United States was more than \$100,000.

The Army Exchange Service had authorized 458 retailers by June 30, 1943, to sell Army Exchange Service uniforms. These authorizations were made on the basis of the military demand in the town or city where a store was located, the type and quality of the store, its credit rating, its experience in the uniform business, and the facilities of the store for making alterations. The Army Exchange Service did not seek out retailers to sell uniforms, but considered applications on their individual merits.

By June 30, 1943, more than 50,000 civilians were employed at post exchanges within the United States. The Army Exchange Service during the year issued a manual setting forth personnel policies and procedures consistent with good exchange management. Employee benefits were liberalized to a large extent during the year. A complete group insurance plan was developed to cover civilian personnel and offered to post exchanges within the United States. By the end of the year, 130 exchanges had put this plan into effect.

The Army Exchange Service directed a school at Princeton University to train exchange officers for duty at posts, in Service Commands, and overseas. During the fiscal year 1943 this school graduated 1,400 officers. The 6th to 13th classes in the school were made up of officers commissioned from civilian life. These were men with previous experience as merchandising executives or as auditors and comptrollers. The 14th class, which graduated in May, 1943, was made up of officers who had previously graduated from the Army Administrative Officer Candidate Schools. Future classes were expected to

be drawn from this source. The last two classes held during the year were reserved for officers who had been assigned to post exchange duty by post commanders.

The Army Exchange Service provided a purchasing service within the United States for overseas exchanges. During the fiscal year 1943 nearly 82,000 purchase orders, totaling over \$69,000,000, were placed by the Procurement Division. A plan was set up whereby the Army Exchange Service became the purchasing agent within the United States for the British Navy, Army, and Air Forces Institute. Purchases amounting to more than \$2,000,-000 were made on its behalf during the year.

A special event catalog was printed and distributed during the year to soldiers overseas. Through an overseas exchange a soldier might order an appropriate gift to be sent to friends and to members of their families throughout the United States on such occasions as Christmas, Mother's Day, Easter, or other special occasions. Orders for gifts amounting to over one million dollars were placed through the Army Exchange Service and delivered within the United States during the year. Eighty thousand orders were placed through the Christmas Catalog. Another 135,000 orders for flowers only were placed on Easter and Mother's Day.

Officers from the Army Exchange Service visited all overseas theaters during the year to inspect exchange activities and to assist in the improvement of overseas exchange work. Officer expeditors were assigned to follow through the orders placed on behalf of a particular theater to insure that the goods arrived at the port of embarkation on time and were shipped without unusual delay.

Some 230 officers were assigned to overseas exchanges through the Army Exchange Service during the year.

The rapid development of overseas exchanges increased the total borrowing of all Army exchanges to more than \$38,000,000 as of June 30, 1943. Of this total, over \$20,000,000 had been repaid. The Army Exchange Service itself obtained a credit up to \$6,000,000 from the Defense Supplies Corporation to purchase small size cans of fruit juices for shipment to overseas exchanges. There was a great demand for fruit juices by soldiers, particularly in hot and arid countries.

The Army Exchange Fund had total revenues of \$4,586,680.73 during the year. Seventy-five percent of this income came from the Army Exchange Service fee, and almost all the remainder from income on merchandising transactions. Total assets of the Army Exchange fund amounted to over \$31,000,000 on June 30, 1943. A contingency reserve of \$2,750,000 was established during the year to meet such claims as might arise. For example, it was decided that the Army Exchange Fund should settle claims of commercial creditors arising from loss through enemy action. A board was appointed to study claims against army exchanges in the Philippine Islands. Justifiable claims against these exchanges were to be paid from the contingency reserve.

Arrangements were made during the year for each Service Command to submit a consolidated financial statement monthly to the Army Exchange

BALANCE SHEET ARMY EXCHANGE FUND AS OF 30 JUNE 1943

ASSETS		LIABILITIES	
Cash in Bank—Trust Accounts.....	\$ 94,339.86	Funds Due Organizations.....	\$ 94,339.86
Cash on Hand and in Bank.....	5,487,011.85	ACCRUED LIABILITIES	
Accrued Interest Receivable	44,614.29	Payroll	\$23,968.01
NOTES RECEIVABLE—EXCHANGES		Group Insurance	373.37
Domestic	\$ 3,420,705.11	Interest	55,996.36
Overseas	14,586,900.00		
Accounts Receivable (fixtures, canned juices, insurance)	334,858.24	Notes Payable—D.S.C.....	18,007,605.11
Uniforms Receivable	1,369,656.21	Accounts Payable (Fixtures, canned juices, sundry)	1,191,798.47
INVENTORY		Uniforms Payable	6,024,131.52
Fixtures for resale.....	\$ 786,591.18		
Canned juices for resale.....	2,181,198.61	Loans Payable—D.S.C. (Canned Juices)	1,213,527.05
Sundry	137.50		
* Reserve for Contingencies Fund.....	2,750,000.00	Reserve for Contingencies.....	2,750,000.00
Fixed Assets	\$88,592.64	Surplus—May 31, 1943	\$1,400,697.53
Less: Depreciation	15,121.33	Net Addition during June, 1943	393,411.33
Prepaid and Other Assets.....	26,364.45	Surplus—June 30, 1943	1,794,108.86
	<u>\$31,155,848.61</u>		<u>\$31,155,848.61</u>
* Cash	\$ 313,364.04	NOTE: Contingent Liability—	
U. S. Treasury Cfts... ..	2,152,284.36	Guarantee of Pentagon Restaurant Loan.....	\$325,000.00
Loans—A.E.S.	284,351.60	Less Payments	32,500.00
	<u>\$2,750,000.00</u>	Balance	<u>\$292,500.00</u>

BALANCE SHEET ARMY EXCHANGES IN U. S. A. AS OF 30 JUNE 1943

ASSETS		LIABILITIES	
CURRENT ASSETS:		CURRENT LIABILITIES:	
Cash on Hand and in Banks.....	\$33,529,675.75	Accounts Payable	\$31,989,345.44
Investments and Securities	1,892,317.14	Unredeemed Coupons	166,305.49
Bills Receivable, E.M.N.	238,977.48	Accrued Liabilities	2,937,581.57
Accounts Receivable	2,864,871.70	A.E.S. Fee Payable	376,419.26
Total Merchandise Inventory	43,125,401.17	Due Portion Notes and Contracts	580,958.95
Other Current Assets	645,297.11	Appropriations Not Paid	503,344.23
TOTAL CURRENT ASSETS.....	\$82,296,540.35	Distributions Not Paid	802,905.03
		Other Current Liabilities	811,167.22
		TOTAL CURRENT LIABILITIES.....	\$38,168,027.19
FIXED ASSETS:		DEFERRED LIABILITIES:	
Buildings and Improvements	\$ 3,461,420.85	Notes Payable A.E.S.....	\$ 3,224,063.23
Furniture and Fixtures	16,140,280.05	Notes Payable—Organizations	7,115.06
Delivery Equipment	1,404,961.01	Notes Payable—Other	331,835.27
Other Fixed Assets	836,687.15	Installment Contracts	1,838,031.42
TOTAL FIXED ASSETS.....	21,843,349.06	Other Deferred Liabilities	172,630.30
Less: Reserve for Depreciation	7,049,140.87	TOTAL DEFERRED LIABILITIES	\$ 5,573,675.28
NET VALUE FIXED ASSETS.....	\$14,794,208.19		
PREPAID AND OTHER ASSETS:		RESERVES:	
Miscellaneous Supplies Inventory	\$ 624,620.01	Reserves for Contingencies	\$ 639,148.58
Prepaid Insurance	773,143.70	Other Reserves	1,271,684.85
Miscellaneous Assets	429,648.98	TOTAL RESERVES	\$ 1,910,833.43
TOTAL PREPAID AND OTHER ASSETS.....	\$ 1,827,412.69	TOTAL LIABILITIES AND RESERVES.....	\$45,652,535.90
		NET WORTH AND SURPLUS.....	\$53,265,625.33
TOTAL ASSETS	\$98,918,161.23	TOTAL LIABILITIES AND NET WORTH.....	\$98,918,161.23

Service. A balance sheet statement and a profit and loss statement for all exchange operations in the United States were then prepared.

In an effort to control profits and in order to insure that exchanges sold goods at the lowest possible prices, the maximum operating profit of post exchanges was set at 7½ percent. Only those exchanges might exceed this rate which had not yet acquired ample working capital. The gross profit on special orders was limited to 2 percent. A War Department Circular issued on April 9, 1943, limited the amount of dividends distributed to organizational funds by post exchanges to fifty cents per man per month.

Operating profit of exchanges in July, 1942, was 10.21 percent of the value of direct sales. In June, 1943, this profit was reduced to 5.7 percent of direct sales. This reduction took place at a time when sales were rapidly increasing. Sixty-five percent of post exchange profits during the year 1943 was allocated to surplus and reserve. About 28 percent was paid out in dividends, and the remaining portion of profits was distributed to such activities as Chaplains funds, post recreation funds, post bands, headquarters funds, and for the purchase of athletic equipment and camp newspapers. Total profits of Army post exchanges in the United States during the year amounted to \$55,000,000.

By the end of the year it was evident that increasing attention would have to be given to the problem of procuring scarce commodities. During the fiscal year 1943 a plan was put into effect for the purchase of razors and razor blades. Under this plan the Army Exchange Service estimated the requirements of all exchanges for these items. Procurement was then made under Quartermaster contracts and the available supply allocated by the Army Exchange Service to Service Commands and overseas theaters. Individual exchanges placed orders directly with the vendor within the limit of the allocations passed on to them by Service Command Headquarters. It was probable that more and more schemes of this kind would be necessary in order to meet soldiers' needs.

PROFIT AND LOSS STATEMENT

Exchanges in the United States
1 July 1942 to 30 June 1943

GROSS DIRECT SALES—Less Returns and Allowances	\$558,606,977.70
Less: Taxes Collected	1,492,222.05
DIRECT SALES	557,114,755.65
Less: Cost of Sales	430,191,028.58
GROSS PROFIT	126,923,727.07
DIRECT DEPARTMENT EXPENSES	
Wages and Salaries	47,170,361.14
Other Direct Expenses	11,564,470.82
<i>Total Direct Department Expenses</i>	<i>58,734,831.96</i>

OVERHEAD AND GENERAL EXPENSES

Wages and Salaries.....	12,682,143.96
Army Exchange Service Fee.....	3,003,044.90
Other Overhead and General Expenses.....	9,905,687.72
<i>Total Overhead and General Expenses.....</i>	<i>25,590,876.58</i>
<i>Total Expenses.....</i>	<i>84,325,708.54</i>
<i>Operating Profit.....</i>	<i>42,598,018.53</i>

ADD: OTHER INCOME

Income on Special Orders.....	203,833.67
Income from Concessions.....	4,915,406.00
Purchase Discount.....	2,363,603.89
Commissions Earned.....	3,464,766.95
Miscellaneous Income—Net.....	1,854,872.87
<i>Total Other Income.....</i>	<i>12,802,483.38</i>
<i>Net Profit.....</i>	<i>55,400,501.91</i>

Office Service

The Adjutant General's Office was the office manager for the War Department in Washington and for Headquarters, Army Service Forces. It arranged for the publication of all necessary forms, Tables of Organization and Equipment, War Department Bulletins and Circulars, Army Regulations, Field Manuals, Technical Manuals, reports, and other papers. It provided office equipment and supplies in Washington; it operated a mail and messenger service.

Army Postal Service

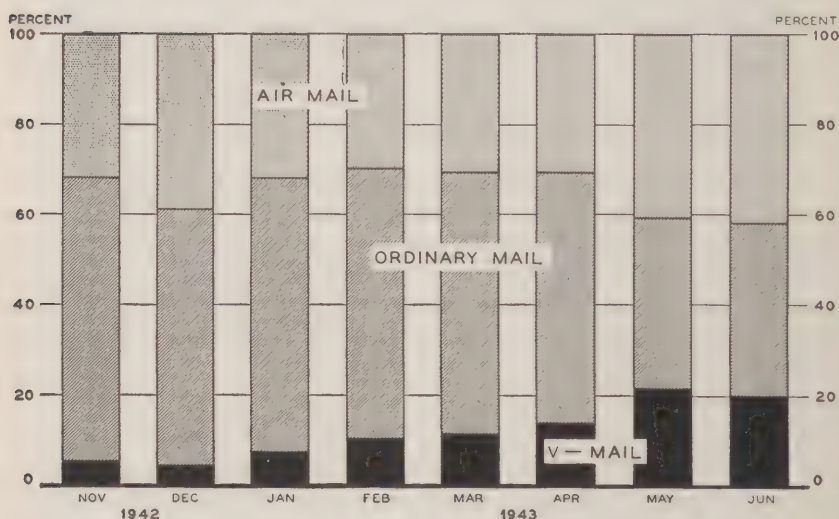
The Army Postal Service in the Adjutant General's Office supervised the handling of mail at army camps and ports of embarkation, directed the training of army postal personnel, and operated a message center for the War Department. Weekly records based upon a sample of approximately 800 letters per week received at 25 representative mail desks in the Army Service Forces, not including mail delivered by courier service or special messenger, indicated that the time required for War Department interoffice mail to reach its destination was cut from 18.3 hours for the week ending February 6, 1943, to 15.37 hours for the week ending June 5, 1943. The average elapsed time includes nights and weekends. The minimum time recorded was 13.36 hours for the week ending May 1, 1943.

The Army Postal Service operated the Army Courier Service for the transmission of secret and confidential communications. The first pouch destined for the Middle East left Washington on May 30, 1942. The first pouch for the Pacific area was dispatched on May 26, 1942. A procedural change was made in September, 1942, whereby Officer Couriers were stationed at ports of embarkation, ports of debarkation, and at control points of the Air Transport Command, the Naval Air Transport Service, and

commercial airlines. Instead of personally carrying all pouches as previously, these Courier Transfer Officers selected officer passengers to act as couriers as far as the next control point. Beginning with 17 courier transfer stations, there were 50 in operation in all parts of the world by June 30, 1943. The volume of courier mail grew from 737 pounds in June, 1942, to 35,817 pounds in April, 1943.

Important in the handling of overseas mail was the introduction of the V-mail system introduced on June 19, 1942. Letters were photographed on microfilm, transported on small reels, and reproduced at destination, the negative was not destroyed until the mail was delivered. This system com-

CHART 68
LETTERS SENT FROM UNITED STATES
TO OVERSEAS THEATERS



bined certainty of delivery with a reduction in necessary cargo space for mail. By June 30, 1943, V-mail was available to and from soldiers serving in 16 foreign countries including the British Isles, Iceland, Greenland, Australia, the Near East, the Southwest Pacific, the Hawaiian Islands, and India.

The volume of V-mail as a percentage of total mail shipment rose from 5 percent in November, 1942, to 13 percent in April, 1943. The 9,056,000 V-mail letters sent in April weighed 1,887 pounds. If these letters had been sent by ordinary mail, the total weight would have been 226,400 pounds. Thus savings of 110 tons of cargo space was achieved. Since the inception of the system, 31,317,000 V-mail letters have been sent. The capacity of various V-mail stations still exceeded the volume of mail processed.

The first large scale test of mobile postal service in war was made in North Africa. A complete Army Postal organization accompanied the

American task forces sent to that theater. Service for first-class mail, air mail, registered mail, parcel post, and money orders was established immediately, ready to make possible Christmas letters and packages.

Realizing the importance of communication at the holiday season, arrangements to facilitate the handling of Christmas mail were made early in the Spring of 1942. When requesting that Christmas mail be posted between October 1 and November 1, the Army Postal Service gave the assurance that special attention would be directed to the problem of delivering it not later than Christmas Day. From October 1 to November 15, 1942, 14,729,680 pounds of Christmas packages and mail were sent overseas, three times the volume of mail sent overseas in 1917 and 1918. This included 2,454,946 pieces of parcel post, 51,753,840 ordinary letters, and 14,443,080 air mail letters. From December 1 to December 15, 1942, three and a half tons of cards and letters were transported to North Africa by plane.

The great volume of mail, requiring eight times more cargo space per man in November, 1942, than was utilized in November, 1918, necessitated certain restrictions upon overseas mail. Packages, for example, were limited in size and weight; publications were accepted from a publisher only upon a soldier's subscription. For security reasons, as well as because of space considerations, the Army discouraged soldiers from answering letters received from strangers.

Personnel Records

One of the largest administrative tasks performed by the Army Service Forces was the maintenance of military personnel records. Each and every individual who entered military service during the war was accounted for by this system of records. When he left the Army, his record was removed from the active file and placed among the demobilized records.

This immense system of record keeping for the whole War Department was operated by the Adjutant General's Office in Headquarters, Army Service Forces.

The Adjutant General's Office kept records of all appointments and inductions into the Army as commissioned officers from civilian components of the Army (National Guard, Reserve, civilian life), as members of the Women's Army Corps, as flight officers, physical therapy aides and hospital dietitians. Such records grew during the year from 1,440,000 on July 1, 1942, to 2,616,000 on June 30, 1943. They were used in verifying names, serial numbers, promotions, and prior service of all officers and former officers of the civilian components of the Army. The cards were also consulted in making promotions.

Other records were kept of all officer personnel, warrant officers, flight officers, and nurses on active service with the Army. These records (201 files) grew from 232,000 on July 1, 1942 to 862,000 on June 30, 1943. They were consulted for all personnel actions of the War Department such as reassignment, promotion, reclassification, and separation. They were also consulted in connection with awards, investigations, and public relations.

To these officer files were added reports of change in station, efficiency

reports, school reports, monthly rosters, promotion cards, and certain miscellaneous reports. On the average 20,400 such reports were being received per month by the end of the year, compared with about 11,800 records at the beginning. The average number of these records per officer decreased from 1.31 at the beginning of the fiscal year to 1.15 at the end of the year.

Promotion records handled by The Adjutant General's Office numbered 13,400 in July, 1942, and about 30,000 in June, 1943. As many as 1,780 promotion records were handled a day. Separation records numbered about 20,000 on file on July 1, 1942, and about 90,000 on June 30, 1943. These records were used to prepare medical histories for use by Army Retiring Boards, and to provide medical information to insurance companies and to the Veterans' Administration.

Appointment, promotion, reassignment and separation records led to publication in War Department Special Orders of the action taken. The records were forwarded each day to the Publication Division of The Adjutant General's Office at 5:30 P. M. The orders were put together, a number assigned, dated, and then sent to the Government Printing Office. As many as 1100 or 1200 individuals might be mentioned in Special Orders for a single day. Paragraphs 1 to 9 of Special Orders dealt with promotions and other announcements arranged by the rank of the individual. Paragraph 10 announced changes in assignment. Paragraphs 11 to 19 showed promotions, paragraph 20 orders to active duty, and paragraphs 21 to the end were used for promotions and miscellaneous items. Some 2100 copies of Special Orders were distributed on a standard list, plus one copy to the Commanding Officers mentioned in paragraphs 1 to 9 and 21 to end, and three copies to every individual mentioned in paragraph 10.

Orders were issued by The Adjutant General's Office to grant an officer leave of absence, or to direct a temporary or permanent change of station. Not all orders were issued by War Department published Special Orders. About two thirds were issued by letter or radiogram. The number of orders issued totalled about 12,000 a month throughout the fiscal year 1943.

Records of enlisted personnel were also kept in The Adjutant General's Office where they were used to prepare information of all kinds about characteristics of enlisted men, to find addresses for mail, and to provide desired information about any man in connection with dependency benefits, awards, or other actions.

Separate records were kept for information about casualties and for reporting casualties to the next of kin. Reports of casualties and deaths were also sent to all other agencies of the War Department concerned, such as the Fiscal Director, the Surgeon General's Office, and the Office of Dependency Benefits. Casualty records expanded during the year from 100,000 in October, 1942 to 600,000 in June, 1943. An average of 8,500 letters was written a month in answer to inquiries about casualties. Also letters were written reporting progress in recovery of casualties.

Special records were kept on the grant of decorations and awards to Army personnel. In addition to the *Medal of Honor*, the *Distinguished Service Cross*, the *Distinguished Flying Cross*, the *Distinguished Service Medal*, the

Soldier's Medal, the *Silver Star*, and the *Purple Heart*, three new decorations were authorized during the fiscal year. These were the *Legion of Merit* created by Act of Congress approved July 20, 1942; the *Medal of Merit* created by the same act for award to civilians; and the *Air Medal* created by Executive Order No. 9158 on May 11, 1942 and Executive Order No. 9242 on September 11, 1942.

Ordinarily all recommendations for an award were forwarded to The Adjutant General's Office for consideration by the War Department Decorations Board. Commanding Generals of separate armies or higher units during the war were authorized to award all decorations save the Distinguished Service Medal and the Medal of Honor. Awards of medals by commanders in the field were forwarded to The Adjutant General for publication in War Department General Orders. The estimated number of awards in the field during the year amounted to about 50,000. Awards by the War Department during the fiscal year were:

Medal of Honor	9
Distinguished Service Cross	3
Distinguished Flying Cross	42
Distinguished Service Medal	123
Legion of Merit	167
Soldier's Medal	182
Air Medal	1009
Silver Star	1540
Purple Heart	2739

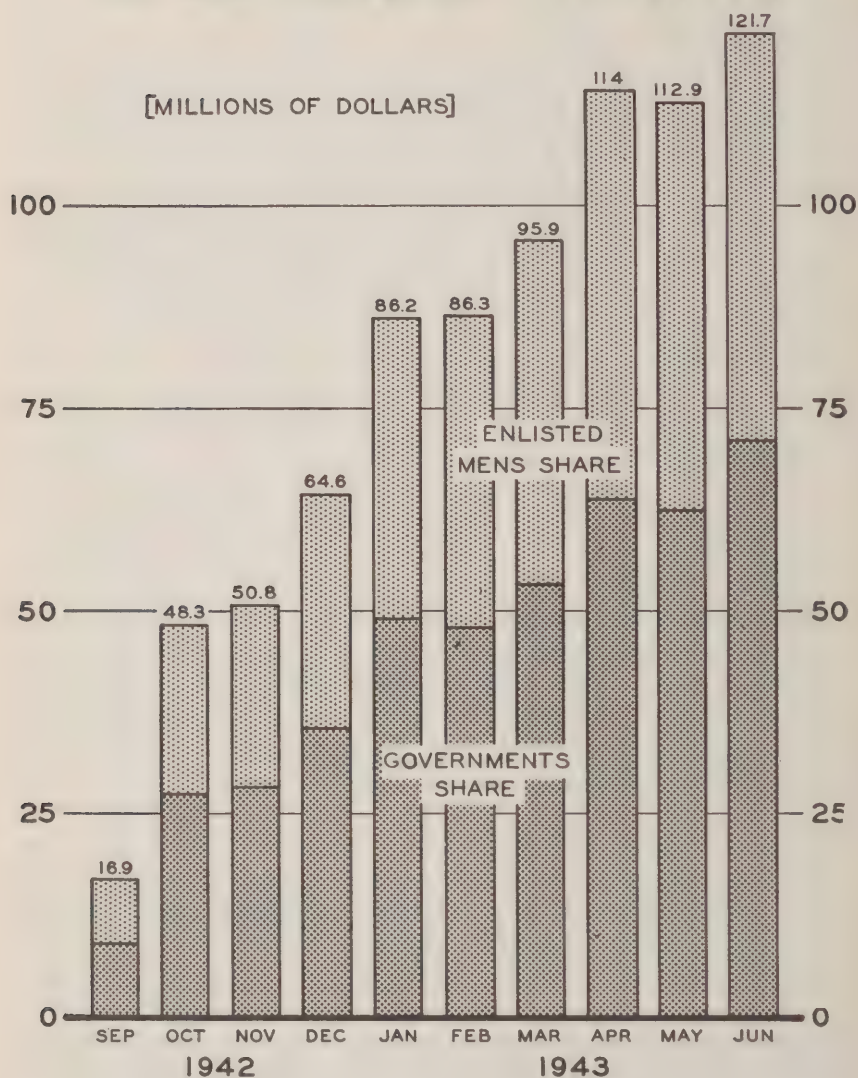
Considerable effort was made during the year to achieve improved efficiency in the handling of all personnel records. Special machines were installed, new devices such as fanfold method of extracts were introduced, and special training of personnel was provided in order to improve the quality and quantity of work performed. All these permitted substantial increases in load to be handled with a minimum expansion in personnel.

Dependency Benefits

Public Law No. 490, 77th Congress, approved March 7, 1942 authorized certain payments to dependents of officers and enlisted men reported as missing, missing in action, interned, or captured. Public Law No. 625, 77th Congress, approved June 23, 1942, provided that a monthly family allowance would be payable to dependents of enlisted men of the fourth, fifth, sixth, and seventh grades of the armed services. The allowance was derived from a charge to the enlisted man's pay and a contribution from the government. If an enlisted man authorized a deduction of \$22.00 a month from his pay, the government would add \$28.00, paying his dependents \$50.00. If an enlisted man had additional dependents besides his wife, the government increased the amount of its contribution. Deductions were to begin on June 1, 1942, and payments on November 1, 1942.

To administer Public Law No. 490, a Board of Officers was appointed by Letter Order on March 30, 1942. On April 3, 1942, the Secretary of War directed that The Adjutant General administer the provision of Public

MONTHLY PAYMENTS OF DEPENDENCY BENEFITS



Law 490, and provided that the Board of Officers, set up for the purpose of receiving, investigating, and acting upon cases arising under the law, report directly to The Adjutant General and be governed by instructions issued by him. The Office of Dependency Benefits, created by an amalgamation of several other branches on October 12, 1942, was established in Newark, New Jersey, to perform the detailed work of administration.

Pressure for the payment of allotments resulted in the issuance of emergency checks to families of enlisted men before the date set for the incep-

tion of the family allotment program, November 1, 1942. It was anticipated that such payments would be deducted from the regular family allowances. Congress moved the date, however, for the issuance of the initial family allotment from November 1 to September 1, 1942, thus making it necessary to mail checks two months in advance of the projected date. In order to do this, no deduction could be made for the emergency allotments previously sent, which resulted in some 113,000 overpayments with a total value of \$7,000,000. A special section was organized to undertake the collection of these overpayments.

As of June 11, 1943, 2,889,581 applications for family allotments had been received. Of these, 2,841,372 applications had been processed, 33,803 were still in process, and 24,376 had been temporarily disallowed because of incomplete or insufficient evidence. Because of 68,376 duplicate applications, 310,098 changes in status, and 31,174 disapprovals of applications, there were 2,431,724 family allowances authorized.

The first payments totaled 16.9 million dollars and increased monthly until April, 1943, reaching a high of \$114 millions. In May, disbursements totaled \$112.9 millions. Since early payments of first checks included payments for more than one month because of the retroactive privilege contained in the bill, the average family payment was larger during those months.

Class E allotments, which were deducted from an officer's or enlisted man's pay at his request for special purposes such as the payment of insurance premiums, rose from a total of \$2,000,000 in November, 1942, to over \$60,000,000 per month at the close of the fiscal year 1943.

National and State Guards

The mobilization of the National Guard into the Army of the United States resulted in the authorization of State Guards to perform the functions of internal security previously exercised by the National Guard. At the close of the fiscal year 1943 the authorized strength of the various State Guards was in excess of 233,000.

State Guard affairs were administered by the Army Service Forces through the Service Commanders, under the general supervision of the Chief of the National Guard Bureau. A State Guard was called to active duty only when conditions within a state or territory warranted its use. The duties performed by the guards while on active duty consisted of flood duty, and guarding bridges, power plants, strategic railroad trestles, and other vital installations. At any one time, only a small percentage of the total mustered strength was on active duty. The high point during the fiscal year 1943 came during the months of November and December, 1942, when 6 percent of mustered strength, or a total of 14,000 men, were on active duty. By the close of the fiscal year the number on active duty had been reduced to approximately 2 percent of total strength.

During the fiscal year 1943, the Service Commands conducted for officers and non-commissioned officers of the State Guard practical courses of instruction and demonstration covering subjects which were applicable to the

employment of state guard units. A total of 64 courses were given, attended by 2,956 officers and 446 enlisted men.

The assistance of the Federal Government to State Guards also took the form of arms, ammunition, and clothing not required for the field forces or the Lend-Lease program. The War Department provided recommended training programs, tables of organization, texts, and instructions for property accounting.

Reserve Officers Training Corps

The enrollment in the basic course of the senior division of the R.O.T.C. fell from 111,478 at the beginning of the school year in October, 1942, to 66,079 at the beginning of the second semester in the middle of the academic year. This drop was caused by the passage of the amendment to the Selective Service Act calling 18 and 19 year old men to service with the armed forces.

The advanced course enrollment remained fairly constant throughout the fiscal year at approximately 23,000. The graduates of this course were then sent to officer candidate schools.

With the induction of 18 and 19 year old men into the armed forces, and the inauguration of the Army Specialized Training Program, the Reserve Officers Training Corps after June 30, 1943, would no longer be an important training medium for reserve officers.

The Junior Division of the R.O.T.C. providing military training at secondary schools had an enrollment of 75,220 persons at the middle of the academic year 1942-1943. Some 10,000 were students at secondary military schools where they were subject to full military discipline. The remainder were students at high schools.

There were 142 institutions which maintained Senior R.O.T.C. units during 1943. Of these, eight were located in military colleges like Virginia Military Institute and The Citadel. Junior units were maintained in 135 schools, of which 40 were military schools.

XVII

CIVILIAN DEFENSE SERVICES

The Army Service Forces provided a number of services to the Office of Civilian Defense in the development of the civilian protection program. As early as 1938 the War Department began to plan the protection of the civilian population from the menace of air attack. It had become apparent that the development of air power had reached the point where an outbreak of war would endanger the civilian population and productive activity far behind the front lines of conflict.

A separate Office of Civilian Defense was created by Executive Order No. 8757, May 20, 1941, to coordinate civil defense activities. From that time on the War Department furnished technical advice, specifications for equipment, instructions, and other services to the Office of Civilian Defense and to state and local defense officials and volunteers.

The Army Service Forces operated 6 civilian protection schools under the general supervision of the Chief of Chemical Warfare Service. Instructors were assigned to these schools from the Ordnance Department and the Corps of Engineers. The schools were located at Amherst College, Loyola University in New Orleans, Purdue University, the University of Washington, Leland Stanford University, and Occidental College in Los Angeles. Funds to operate these schools were provided by the Office of Civilian Defense.

All of the schools had the same schedules, including four different courses of five days each. The basic protection course, originally of ten days duration, was the only course offered at one time. The plant protection course for industrialists devoted 1½ days to internal security and 3½ days on the preparation of plants to withstand air attack. The gas course trained civilian gas specialists. The fourth course was a staff course for personnel in the Office of Civilian Defense on governmental and military aspects of civilian defense.

In addition to the civilian enrollees in these courses, military enlisted and commissioned personnel were also designated to take the courses. Officers were specially trained in civilian defense measures for work in overseas theaters of operations. Special courses were also given for Naval and Coast Guard personnel. By June 30, 1943 more than 10,000 persons from every state in the United States and from Canada, Mexico, Uruguay, and the Canal Zone had attended the schools. Of this number, 789 were officers and 612 were enlisted men of the Army of the United States, while 674 were Naval and Coast Guard personnel. During the fiscal year 1943 attendance at the courses numbered 7,450 persons.

The instructional staff organized for a civilian protection school to be located at the University of Maryland was turned into a mobile demonstration unit. The personnel and equipment included 8 officers, 35 enlisted men, and 14 trucks. The unit presented a demonstration entitled "Action Over-

head." An incendiary demonstration was presented at night. The unit traveled throughout the United States under the auspices of the Office of Civilian Defense which assumed all expense for travel, equipment, and per diem allowances. By June 30, 1943 "Action Overhead" had traveled about 12,600 miles and had given 96 demonstrations in 74 cities before 1,500,000 people. The unit was also utilized to demonstrate various techniques to troops prior to their departure for overseas destinations.

The Office of the Chief of Engineers advised the Office of Civilian Defense about standards in protection, construction, concealment, and blackouts. Material for various pamphlets published and distributed by the Office of Civilian Defense was prepared by the Chief of Engineers. These pamphlets dealt with such subjects as "Air Raid Shelters in Buildings", "Glass and Glass Substitutes", and "Blackouts". The Surgeon General of the Army cooperated with the Surgeon General of the United States Public Health Service in the preparation of material on "The Prevention and Treatment of Chemical Casualties". The Chief of Ordnance, with the assistance of the National Technological Civil Protection Committee, prepared information for "Bomb Disposal", another publication of the Office of Civilian Defense. The Signal Corps worked with the Office of Civilian Defense also in the production of motion picture releases.

The Army Service Forces purchased civilian protection equipment as requested by the Office of Civilian Defense. The development of specifications, standardization, procurement, inspection, and shipment of such supplies were all performed by the Army Service Forces. The Quartermaster General purchased protective clothing, the Surgeon General medical supplies, and the Chief of Chemical Warfare Service obtained gas masks and other items.

The Provost Marshal General and the Service Commands worked together with the national and regional offices of the Office of Civilian Defense in a program for the protection of specified facilities vital to the war effort.

During the fiscal year 1943 there was a general slow-up of activity in the field of civilian defense. The camouflage and passive defense program was adjusted to a more realistic conception of necessary measures required by the changing strategic situation. A similar lessening of activity in Great Britain was paralleled in the United States. The diminishing program did not indicate a conviction that the United States was free from the menace of air attack. Nor was there any relaxation of vigilance in the defense of the nation. Rather, what took place was an adjustment of programs to avoid unnecessary and expensive protective measures which a study of the effectiveness of air attacks upon Britain revealed to be exorbitant.

XVIII

PROBLEMS OF MANAGEMENT

When the Army Service Forces was created on March 9, 1942, many different branches and bureaus of the War Department were transferred to it. In establishing its essential organization, the Army Service Forces differentiated four major elements. The first of these was the Staff Divisions to assist the Commanding General in the performance of his responsibilities for the operation of all functions and services assigned to the Army Service Forces; the second major element was the then-called Supply Services; the third was the Administrative Services; and the fourth was the Corps Areas. The administrative structure of the Army Service Forces as it existed on June 30, 1942, is shown in the accompanying chart.

Effective July 1, 1942 one of the Administrative Services, the Statistical Service, was abolished and its function and personnel transferred to the Control Division in the Office of the Commanding General. On July 11, 1942, by General Orders No. 22, Headquarters, A.S.F., the General Depots Service was abolished as a separate Supply Service and supervision of general depots was transferred to the Quartermaster General. The Washington headquarters of the General Depots Service had been a very small organization. All the depots continued to be utilized by various Supply Services.

The other major changes in the Supply Services during the year were the transfer of the Motor Transport Division in the Office of the Quartermaster General to the Chief of Ordnance by War Department Circular No. 245, July 25, 1942, and the change in designation of the Transportation Service to Transportation Corps by War Department General Orders No. 38, July 31, 1943. The transfer of automotive activities from the Quartermaster Corps to the Ordnance Department concentrated in a single agency responsibility for the procurement of trucks, armored cars, and tanks.

A major reorganization of the Staff Divisions and Administrative Services of the Army Service Forces was effected on July 20, 1942, by General Orders No. 24. Two of the Administrative Services—Special Service and The Adjutant General's Office—became Staff Divisions. At the same time the number of Staff Divisions grew to a point where it became necessary to group them in order to lessen the number of persons reporting directly to the Commanding General. Accordingly, three new Assistant Chiefs of Staff were set up—one for Personnel, one for Operations, and one for Materiel—and the previous position of Deputy Chief of Staff for Requirements and Resources was abolished. The Training Division, the Fiscal Division, and The Adjutant General's Office reported directly to the Commanding General.

A reorganization of the field units of the Army Service Forces took place on July 22, 1942, when the Corps Areas became Service Commands. This administrative development is described in detail below.

In the period from July 20, 1942, to May 15, 1943, a number of minor adjustments took place in the organization of the Staff Divisions of Army

ORGANIZATION OF THE SERVICES OF SUPPLY ON JUNE 30, 1942



Service Forces. A new division called Strategic Logistics under the Assistant Chief of Staff for Operations was created by Circular No. 53 on August 28, 1942. This division took over responsibility for studying the special supply needs of various overseas theaters and developed information about local raw material and industrial resources. The Public Relations Division was abolished by Circular No. 54, August 29, 1942, in accordance with instructions received from the Secretary of War. Most of the personnel and activities of this division were transferred to the War Department Bureau of Public Relations. The division was replaced by a small Office of Technical Information to provide a connecting link between the Army Service Forces and the War Department Bureau of Public Relations. The Army Specialized Training Division was created on December 18, 1942 by Circular No. 95 to be responsible for staff supervision, under the Assistant Chief of Staff for Personnel, of the newly established Army Specialized Training Program. The Resources Division and the Production Division under the Assistant Chief of Staff for Materiel were combined into a single Resources and Production Division by Circular No. 96 on December 29, 1942. The name of this division became simply the Production Division by Circular No. 32 on May 18, 1943. The designation of the Civilian Personnel Division was changed to the Industrial Personnel Division by Circular No. 7, January 23, 1943.

The divisions under the Assistant Chief of Staff for Operations were reorganized by Circular No. 18 on April 13, 1943. By this order the Strategic Logistics and the Plans Division were combined into a single Planning Division. The name of the Distribution Division was changed to that of Stock Control Division. Three new divisions were created—a Mobilization Division, a Storage Division, and a Maintenance Division.

A new Administrative Service within the Army Service Forces was added by War Department Circular No. 367 on November 2, 1942. This was designated the Officer Procurement Service and was set up to handle on a uniform basis requisitions for officers to be filled by commissioning from civilian life.

With the creation of the Service Commands in July, 1942, the Administrative Services, for the most part, ceased to have direct control over the field performance of their particular activity. Instead, responsibility for field performance was vested in the hands of Service Commanders. The Administrative Services became staff agencies in Headquarters, Army Service Forces, planning and supervising in their respective fields of interests the work done by Service Commands. Much of the work of the Administrative Services consequently was closely related to work performed by Staff Divisions of the Army Service Forces.

On May 15, 1943, by Circular No. 30, the Administrative Services were combined with the Staff Divisions to make a single headquarters organization. The positions of Assistant Chiefs of Staff for Materiel, Operations, and Personnel and the position of Chief of Administrative Services were abolished. All Staff Divisions were grouped under six staff directors—the Director of Personnel, the Director of Operations, the Director of Materiel, the Director of Military Training, the Director of Administration, and the Fiscal Director.

ORGANIZATION OF THE ARMY SERVICE FORCES



In addition to the Chief of Staff who was second in command of the Army Service Forces, Circular No. 30 provided for a Deputy Chief of Staff for Service Commands. The Deputy Chief of Staff acted for the Commanding General and the Chief of Staff on matters pertaining to Service Commands.

As already indicated, the procurement, storage, and distribution responsibilities of the Army Service Forces were performed by seven Technical Services. This division of responsibility was based upon types of materiel procured. In addition, the Technical Services had certain other responsibilities. They controlled directly or exercised staff supervision over the training of troop units to perform support and service functions for Army divisions, corps, armies, and theaters of operation. The Chief of Engineers was responsible for the construction program of Army Service Forces. He also supervised in a staff capacity the purchase and leasing of real estate and utilities and maintenance operations by Service Commanders. The Transportation Corps was responsible for the domestic and overseas movement of men and supplies. The Chief Signal Officer directed a world-wide communications system. The Surgeon General, in a staff capacity to the Commanding General, supervised the provision of hospital service to troops within the United States and advised the War Department about general health measures.

The Staff Divisions of Army Service Forces performed three types of work. In the first place, they formulated policies in their respective functional fields and supervised the performance of these activities by Technical Services and Service Commands. In the second place, they performed certain operating functions for the War Department as a whole. In the third place, they performed various internal management services for Headquarters, Army Service Forces. A few Staff Divisions had field offices under their immediate control to assist them in the performance of their responsibilities.

In the field of purely staff activity, the Staff Divisions had planning, supervisory, and coordinating responsibilities. Thus the Requirements Division prepared the Army Supply Program which was the basis for the procurement activity of the seven Technical Services. This Division also supervised research and development activity by the Technical Services and exercised general oversight of relations with the Office of Scientific Research and Development and the National Inventors' Council. The Purchases Division determined general purchasing procedure and practice, including common provisions of contracts. It supervised renegotiation of contracts. It also provided a single avenue of contact with the Office of Price Administration on price problems. It assigned responsibility among the Technical Services for the purchase of the same or similar types of articles. The Production Division directed the computation by each Technical Service of its requirements for raw materials and presented these to the War Production Board. It also supervised production scheduling by the Technical Services and controlled the program balance of procurement objectives. Also, it transferred raw materials from one Service to another as the need arose.

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The International Aid Division directed the transfer of supplies by the Technical Services to Lend-Lease nations.

The work of the Staff Divisions under the Director of Operations was of a similar character to that of the divisions under the Director of Materiel. The Planning Division studied the supply needs of overseas theaters and advised the War Department General Staff on the determination of required levels of supply to be maintained there. It also approved evacuation and hospitalization plans for overseas theaters. The Storage Division supervised depot operations by the Technical Services within the United States. The Stock Control Division directed supply distribution activities of the Technical Services and Service Commands. The Maintenance Division supervised maintenance activities by Service Commands and by Technical Services. The Mobilization Division directed the organization, activation, and assignment of A.S.F. troop units. It also prepared movement orders for the overseas dispatch of men and supplies.

The Military Training Division formulated basic policies and supervised training activities by the Technical Services and the Service Commands. The divisions under the Fiscal Director supervised accounting activities by the Technical Services and Service Commands, as well as the disbursement work performed by the Service Commands. The Army Exchange Service set policies for the operation of exchanges by Service Commands. The Provost Marshal General supervised internal security activities and the training of Military Police units by Service Commands. The Judge Advocate General supervised the system of military justice operated by the Service Commands. The National Guard Bureau and the Executive for Reserve and R.O.T.C. Affairs supervised activities in their respective fields. The Adjutant General directed the postal operations of Service Commands, and their distribution of Army publications.

The Director of the Women's Army Corps directed the recruitment and training of women's units by the Service Commands. The Director also prepared the orders for assignment of women personnel and watched over their general welfare. The Industrial Personnel Division supervised labor supply, labor relations, and civilian personnel activities of the Technical Services and the Service Commands. The Military Personnel Division set military personnel policies for Technical Services and Service Commands. The Army Specialized Training Division directed the training of special units in American colleges and universities under procedures administered by the Service Commands. The Officer Procurement Service directed the recruitment of officer personnel by the Service Commands. The Office of the Chief of Chaplains directed the recruitment of Chaplains and their training by Service Commands. The Special Service Division supervised recreational and welfare activities and the distribution of motion pictures to Army posts.

The Control Division supervised the reporting system for the Army Service Forces and advised the Commanding General on administrative organization and procedures. The Technical Information Division formulated public relations policies for the Army Service Forces and provided liaison with War Department Bureau of Public Relations.

All Staff Divisions exercised their planning and supervisory responsibilities in the name of the Commanding General of the Army Service Forces.

Besides their purely staff activities, certain Staff Divisions had operating responsibilities which they performed for the War Department or for Headquarters of the Army Service Forces. The Judge Advocate General was the law officer for the War Department and the official legal advisor for the Army as a whole. The Adjutant General operated a publications service for the War Department; officially issued orders for both the War Department and the Commanding General, Army Service Forces; maintained central personnel records for the Army; and paid out dependency benefits through an office located in Newark, New Jersey. He also was the custodian of War Department records. The Fiscal Director was the budget officer for the War Department, and was responsible for the collection of estimates and their presentation to the appropriation committees of Congress. The Special Service Division published the newspaper *Yank*, prepared orientation and general training literature, and produced orientation films for use by troops.

The Adjutant General's Office also operated office services for Headquarters of the War Department and of the Army Service Forces. It provided a central civilian personnel service for the Staff Divisions of Headquarters, ASF. The Military Personnel Division provided a similar service for military personnel.

In order to clarify the organizational structure of the Army Service Forces and the assignment of responsibilities, an organization manual was first issued the end of July, 1942. This manual was revised and printed in September, and again in February, 1943. The manual was the official statement for the Army Service Forces of the mission, major functions, and organizational structure of each staff division and Technical Service, and of the Service Commands. It also presented the general organizational principles of the Army Service Forces.

As mentioned before the operating responsibilities rested with the Technical Services organized by types of materiel, and the Service Commands, organized on a geographical basis. The functional and other special threads running through more than one of these operating agencies were supervised by the Headquarters staff. The principal field agencies of the Technical Services were procurement district offices, depots, manufacturing plants, training centers, and laboratories. The principal field units under the Service Commands were Army camps, posts, and stations.

The organization of the Army Service Forces was complex. But so were its responsibilities.

Military Personnel

In performing its several missions the Army Service Forces had both military and civilian personnel at its disposal. This military personnel performing the work of the ASF was not synonymous, however, with the total military strength of the Army Service Forces as officially recorded at any one time. The Commanding General of the Army Service Forces had under

his command many troops which were only temporarily a part of ASF and which were the beneficiaries rather than the performers of ASF activities.

For example, men at induction stations and reception centers in the process of entering the Army were officially classified as under the Army Service Forces. But this was purely a temporary status until the process of reception and assignment to Army Ground Forces, Army Air Forces, or Army Service Forces was completed. So also, troops in staging areas and en route overseas were counted as a part of the Army Service Forces until actually delivered to the commander of a foreign theater. The trainees at Army Service Forces schools were being trained for assignment to Army Ground Forces, Army Air Forces, or overseas theaters. They were not a part of the *operating* personnel of Army Service Forces.

In order to clarify thinking about its military personnel, the Army Service Forces during the fiscal year 1943 drew a careful distinction between *operating* and *non-operating* personnel. The military personnel doing the work of ASF, such as station complements, officers in procurement districts and at depots, troops in Ports of Embarkation, were *operating* personnel. Inductees, patients in hospitals, troops en route overseas, and trainees were *non-operating* personnel.

In reviewing the growth in military strength of the Army Service Forces during 1943, it is essential to observe this distinction. On July 1, 1942, the operating military personnel of the Army Service Forces totaled about 252,000 officers and men; on June 30, 1943, the operating personnel amounted to 546,000 officers and men, an increase of 114 percent. On July 1, 1942, the non-operating military personnel of the Army Service Forces amounted to 288,000 officers and men; on June 30, 1943, this number was 840,000, an increase of 191 percent. It should be noted that operating personnel included officers and enlisted men in table of organization units assigned to Army Service Forces for functional activities. These permanent table of organization units numbered about 17 percent of total operating strength.

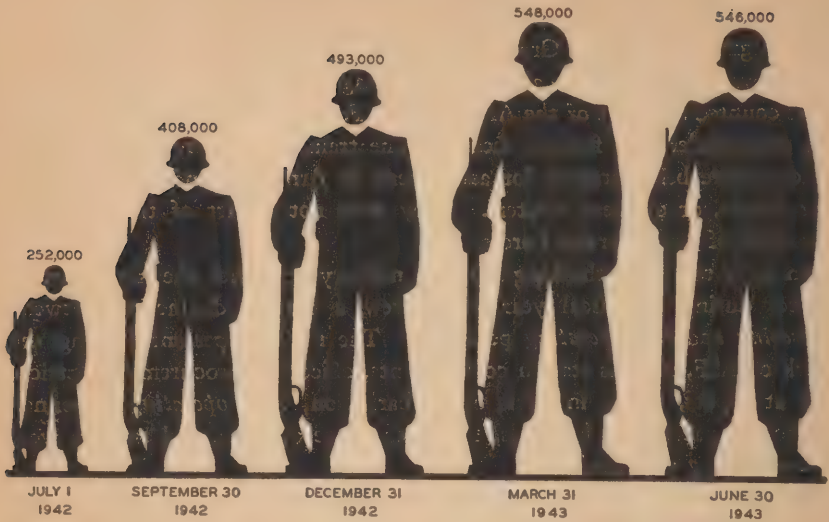
The employment of military personnel differed noticeably in the major organizational units of the Army Service Forces. No enlisted men were assigned to Headquarters, either to Staff Divisions or to the Offices of the Chiefs of Technical Services. The Technical Services in the field likewise made little use of enlisted men, except for the Transportation Corps which, on June 30, 1943, had almost 53,000. The bulk of enlisted men were in Service Commands. They numbered more than 330,000 on June 30, 1943.

Although some effort was made prior to January, 1943, to replace general by limited service enlisted men in order to release the physically able-bodied for combat service, an intensified replacement program was begun in January and considerable progress was made during the following months. The results achieved in the Service Commands are shown in the accompanying chart.

While the Technical Services made little use of enlisted men, they relied upon officer personnel for most of their supervisory and administrative work. Because of its extensive procurement work and various other duties such

CHART 73

OPERATING MILITARY PERSONNEL ARMY SERVICE FORCES



as medical work, religious welfare, and administrative work, the Army Service Forces had a larger proportion of officers than did Army Ground Forces and Army Air Forces.

The following table summarizes the distribution of operating military personnel by major types throughout the Army Service Forces as of June 30, 1943:

	Total	Officers
GRAND TOTAL	545,976	78,690
Headquarters TOTAL	5,400	5,260
Military District of Washington TOTAL	4,112	878
Field TOTAL	536,464	72,552
OFFICE, COMMANDING GENERAL & STAFF DIVISIONS		
TOTAL	4,123	2,883
Headquarters	2,322	2,199
Field in Military District of Washington	44	18
Field Outside Military District of Washington	1,757	666
TECHNICAL SERVICES—TOTAL	130,893	31,815
Headquarters	3,078	3,061
Field in Military District of Washington	4,068	860
Field Outside Military District of Washington	123,747	27,894
SERVICE COMMANDS—TOTAL	407,628	43,510
OTHER—Field Outside Military District of Washington ..	3,332	482

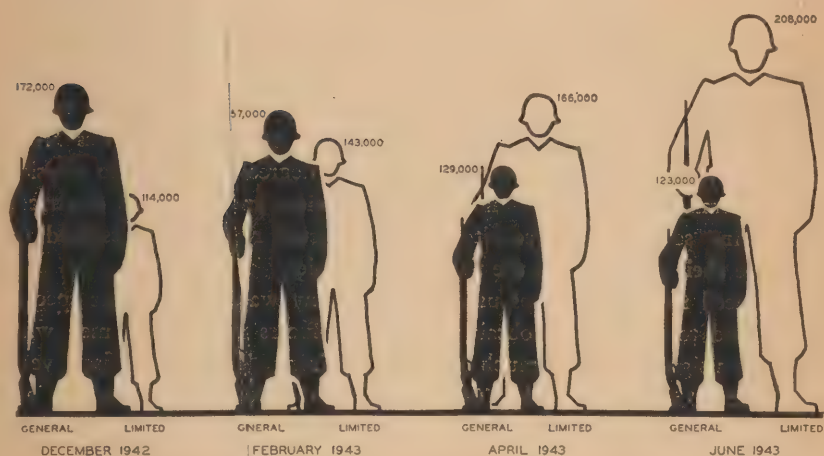
Although the past year witnessed a most rapid expansion in the activities of the Army Service Forces, this expansion was not fully reflected in the growth of its military personnel. As far as possible the Commanding General of the Army Service Forces sought to fulfill his missions by the use

of civilian personnel. To the extent that military personnel were employed for operating purposes, every effort was made to use as many limited service troops as far as possible. During the latter part of the year steps were also taken to replace military personnel by WAACs.

A considerable portion of the operating officer personnel of the Army Service Forces was recruited from civilian life. This was necessary at a time when the Army was growing from its very small peacetime strength in June, 1940, to over 7,000,000 by June 30, 1943. On January 15, 1943, however, the Army Service Forces discontinued recruitment from civilian

CHART 74

GENERAL VS LIMITED SERVICE ENLISTED PERSONNEL OF THE
ARMY SERVICE FORCES



life except in certain special fields, such as medicine, engineering, metallurgy, electronic physics, cryptanalysis, transportation and the ministry.

The Army Service Forces faced a special personnel problem in finding officers with professional and scientific education and experience. For example, the War Department had always relied upon the regular medical schools of the nation to train the men who might be persuaded to join the Army Medical Corps. Similarly, the Army was dependent upon civilian institutions for the training of physicists and others with an advanced knowledge of electronics and communications. Wartime needs for officers of course far exceeded any peacetime provisions for training them. But in specialized lines particularly there were few, if any, means for meeting that training deficiency.

The Medical Corps during the fiscal year 1943 expanded from 16,872 to 37,145 officers; the Dental Corps grew from 4,500 to 12,046. The needs of the Army on June 30, 1943, were still unfilled. In July, 1942, the Medical Department of Army Service Forces had one or more officer recruiting boards operating in each state. The monthly recruitment of doctors

expanded steadily until October, 1942. The designation of doctors who might join the Army was then taken over by the Procurement and Assignment Service of the War Manpower Commission. In each state the Procurement and Assignment Service designated a committee consisting of one doctor, one dentist, and one veterinarian. The state committees in turn set up subcommittees in each county. These local committees determined which professional residents should be classified as "necessary" to the community and which ones should be considered eligible for military service.

Doctors listed as eligible were offered commissions in the Army of the United States by local recruitment offices of the Service Commands. Doctors were not required to accept the proffered commission. If within draft age, of course, they were subject to possible induction into the Army. The number of doctors recruited declined steadily, so that by the end of the year there was a shortage of 5,000 medical officers. One factor was the decreasing number of physicians under 45 years of age physically qualified for Army service. Every possible method of utilizing doctors to the best advantage was taken to help alleviate the shortage.

During July and August, 1942, the Signal Corps by means of an intensive recruiting campaign obtained many needed officers. Graduates from colleges with electrical engineering degrees or degrees in electronic physics were commissioned as second lieutenants. Juniors and seniors in electrical engineering schools were recruited in the enlisted reserve and assigned to continue their education in the field of electronics.

The need for Signal Corps units by the Army was so great that special efforts had to be made to obtain competent officers and enlisted men who could be assigned without much additional training. During the fiscal year 1943 some 530 officers and 1700 enlisted men were obtained through an affiliated plan. Under this arrangement, highly skilled technicians were obtained from the communications industry to become a technical cadre for a Signal Corps unit. These units were activated over a period of time, but until activation the personnel continued to work for the private company sponsoring the affiliated unit. In this way the withdrawal of trained personnel from communications companies was arranged to be the least disruptive. This plan ceased in December, 1942.

The Transportation Corps, the Corps of Engineers, and other branches of Army Service Forces all faced the problem of finding qualified and experienced personnel from civilian life who would require a minimum of training by ASF itself.

It was evident early in the calendar year 1943, however, that special abilities would have to be trained and developed within the Army, through the Army Specialized Training Program and the specialist schools of the Army Service Forces.

Civilian Personnel

During the twelve months ending June 30, 1943, the civilian working personnel of the Army Service Forces increased by almost 50 percent. With over a million employees, the Army Service Forces became the nation's largest

CHART 75

TOTAL ASF CIVILIAN PERSONNEL

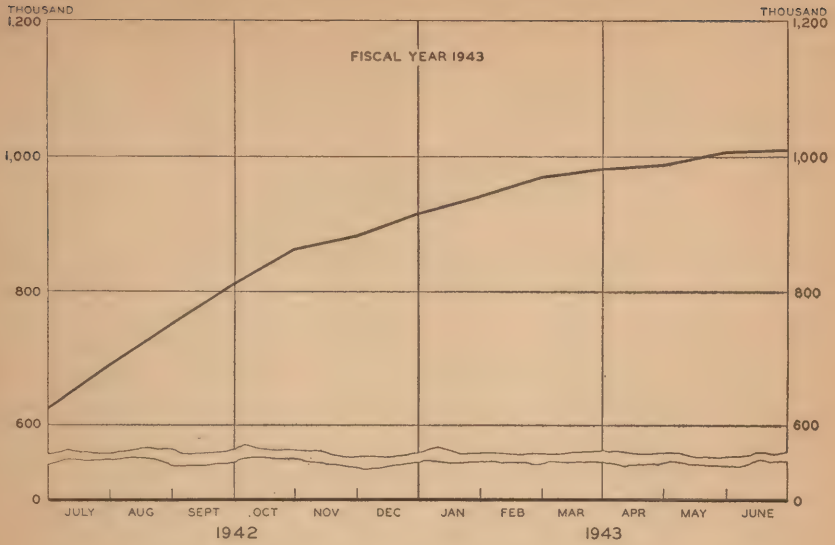
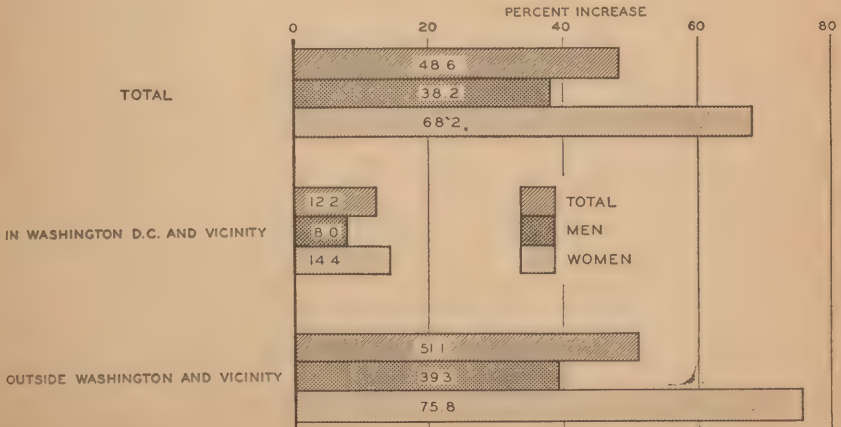


CHART 76

INCREASE IN CIVILIAN PERSONNEL

1 JULY 1942 TO 1 JULY 1943



PERCENTAGE DISTRIBUTION OF ASF CIVILIAN EMPLOYEES
BY STATES - 31 DECEMBER 1942



236

civilian working organization. These employees were located in several thousand establishments scattered over the forty-eight states. They performed operations that ranged from the grinding of lenses and the development of intricate electrical equipment to the operation of vessels and the disbursement of billions of dollars in contracts and Army pay.

On June 30, 1943, the total civilian strength of the Army Service Forces stood at 1,037,917. The number of women employees on this date was about 68 percent greater than of July 1, 1942, and men 38 percent greater, as compared with 49 percent for all civilian employees.

Of the total working force on June 30, 1943, 39 percent were women, making the Army Service Forces the largest employer of women in the nation for all types of jobs, from running lathes and drill presses to repairing automobiles and inspecting materiel.

The Technical Services employed 645,090 civilians on June 30, 1943. More than one-third (37.9 percent) were women, the proportion varying from 25.9 percent for the Corps of Engineers to 55.2 percent for the Medical Department. In the Service Commands, with a total of 356,878 civilian employees, the percentages ranged from 30 percent to 50 percent women.

The types of work done by Army Service Forces employees ranged from departmental service to construction and research work. One-fourth of all employees were employed at camps, posts and stations, while 18 percent were engaged in the manufacture of arms and ammunition. Fifteen percent more handled, stored and distributed supplies.

Within each installation of the Army Service Forces, a variety of tasks had to be performed. The category to which the installation belonged largely determined the composition of the working force. Such installations as Quartermaster depots, Ordnance arsenals and Army posts called for widely varying types of skills.

Approximately one-half of the civilian employees of Army Service Forces were in the "ungraded" category, i.e., they occupied jobs not covered by Federal classification statutes. These workers were paid rates prevailing in the areas in which they were employed, such rates traditionally being fixed by wage boards or other authority. At the beginning of the fiscal year it became evident that if each component organization of the Army Service Forces went its own way, great variations in wage structure would result.

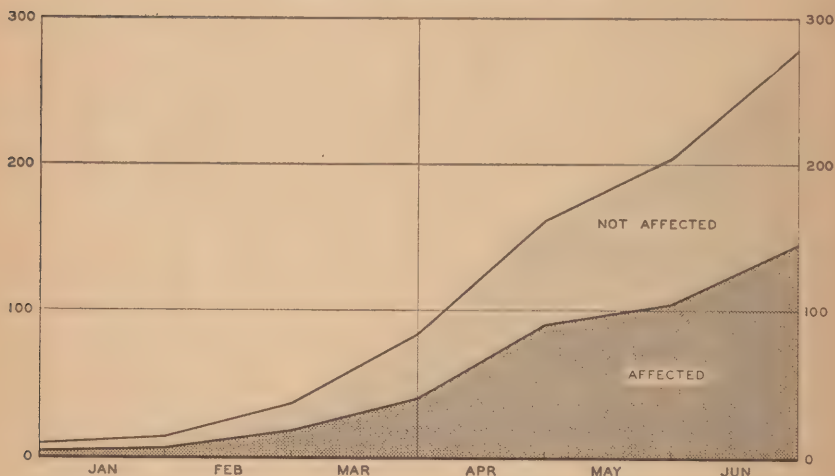
To remedy this defect, the Army Service Forces developed and applied a streamlined technique of job analysis, evaluation, and pricing. During this fiscal year, 246 locality wage boards were authorized and wage schedules approved for 509 establishments which employed more than 282,000 persons in ungraded positions. The efficiency of this procedure for wage control and stabilization was recognized by the National War Labor Board, which delegated to the War Department Agency within the Army Service Forces the authority to rule upon all applications for wage and salary adjustments affecting War Department employees. About half of the employees in establishments where wage structures were subject to alignment under this procedure were affected by changed wage schedules. The growth in the

progress of the locality wage schedule program, together with a comparison between employees affected and not affected by the imposition of a wage schedule, is shown in the accompanying chart.

In addition to its general responsibility for developing plans which would assure equitable and economic wages to those in industrial or craft occupations, the Army Service Forces became responsible for the proper administration of the Federal classification statutes for its own employees. The discharge of this responsibility meant training thousands of officers and civilians in the provisions of Federal law and regulations as well as giving them

CHART 78

EMPLOYEES AFFECTED AND NOT AFFECTED
BY CHANGED WAGE SCHEDULES
CUMULATIVE FROM JANUARY 1943



assistance in the many instances where the "national" system of equal pay for equal work provided for under the classification laws proved inconsistent with the local prevailing wage technique used in establishing rates for ungraded jobs.

The need for adequate training programs has been recognized in both industry and government for years. In an organization expanding as rapidly as the Army Service Forces and in a period when a large proportion of its experienced males was being siphoned off for military duty, constant training was the only way to avoid a breakdown.

For basic supervisory training, the facilities of the Training-within-Industry Section of the War Manpower Commission were utilized. Up to June 30, 1943, a ten-hour program of intensive instruction and practice in how to instruct a worker on a new job was given to more than 82,500 supervisors. In order to aid supervisors in getting maximum cooperation from each individual supervised, job relations training was also given. Begun

CHART 79

ARMY SERVICE FORCES CIVILIAN WORKERS

NUMBER OF WORKERS BY MAJOR KINDS OF WORK

1 MAY 1943



*TOTAL 100 = 1,026,100

*INCLUDES 33,657 FORCE ACCOUNT WORKERS OF THE CORPS OF ENGINEERS AND 16,583 EMPLOYEES ON TERMINAL LEAVE.

CIVILIAN WORKERS IN A TYPICAL ORDNANCE MANUFACTURING ARSENAL



EACH FIGURE REPRESENTS 200 WORKERS

in March, 1943, by the end of the fiscal year approximately 26,400 supervisors had received this second type of special training.

These basic courses in supervisory training were supplemented by many others designed specifically to improve the quality of supervision or execution in one of the many phases of Army Service Forces operations.

The Signal Corps, for example, taught civilian employees at a school in Philadelphia such skills as crystal cutting, pipe fitting, transmitter repair, and warehouse checking. Other courses were given civilian employees in instrument repair, bookkeeping machine repair, and teletype repair. The

CIVILIAN WORKERS IN A TYPICAL QUARTERMASTER DEPOT

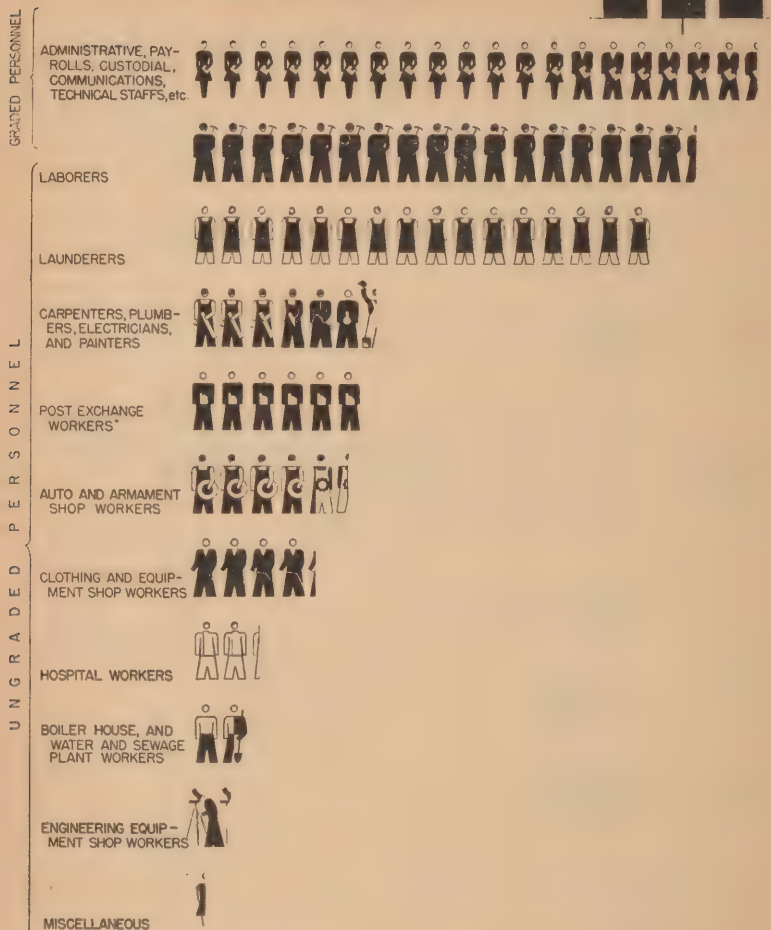


Ordnance Department operated civilian training courses at 250 installations, ranging from arsenals to vocational schools.

Reaching even greater numbers, however, were on-the-job training programs developed by the Technical Services and used by them to instruct employees in definite operating techniques, ranging from the manufacture of optical and communications equipment to the handling of military correspondence and the packaging of munitions.

Special instruction in new government procedures—such as the Controlled Materials Plan—was provided by the Army Service Forces to all who needed

CIVILIAN WORKERS IN A TYPICAL ARMY CAMP



*EMPLOYEES OF POST EXCHANGE NOT REGULAR FEDERAL EMPLOYEES

EACH FIGURE REPRESENTS 20 WORKERS

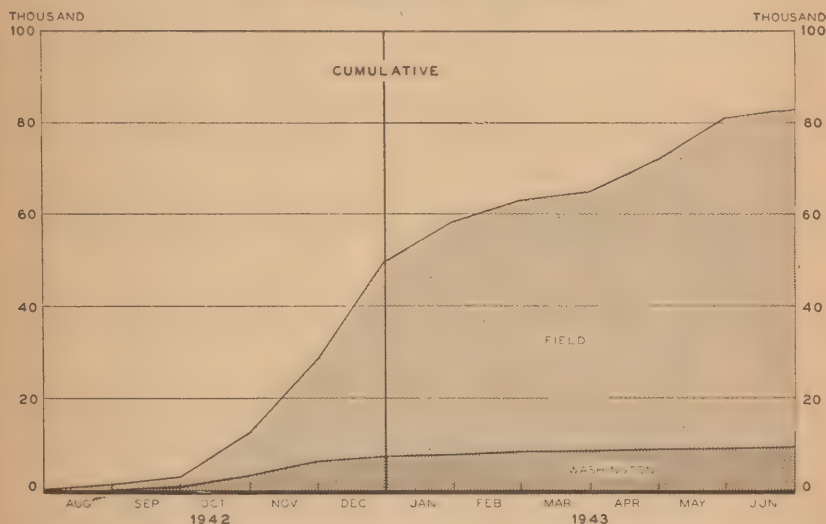
it. CMP training proved so successful that the war Production Board adopted it for training its own employees and as a means of instruction to the thousands of manufacturers who had to use its procedures to obtain raw materials.

Another type of training, safety training, was also emphasized during the year. The results were impossible to measure since there was no way to tell how many lives would have been lost, limbs mangled, eyes put out, or depots fired if employees had not received some minimum instruction on the fundamentals of how to handle themselves, their tools, and the material with which they worked. The importance of this program was evident

when it was recalled that thousands of Army Service Forces workers daily made, moved, stored, and guarded explosives, incendiaries, and other substances deliberately designed to be death-dealing. Other thousands of employees were engaged in construction and maintenance jobs where accident rates were traditionally high.

Placement, unfortunately, was not a simple matter of acquiring a certain number of workers, training them, and fitting their skills together like pieces of a jig-saw puzzle. Not only were the younger men drafted but many of the older found better opportunities elsewhere. Many women quit to get married, or because they wanted to return home where the pressures

CHART 83
ASF SUPERVISORS RECEIVING
JOB INSTRUCTOR TRAINING



were a little less insistent and where working conditions seemed to be preferable. These and other factors produced labor turnover.

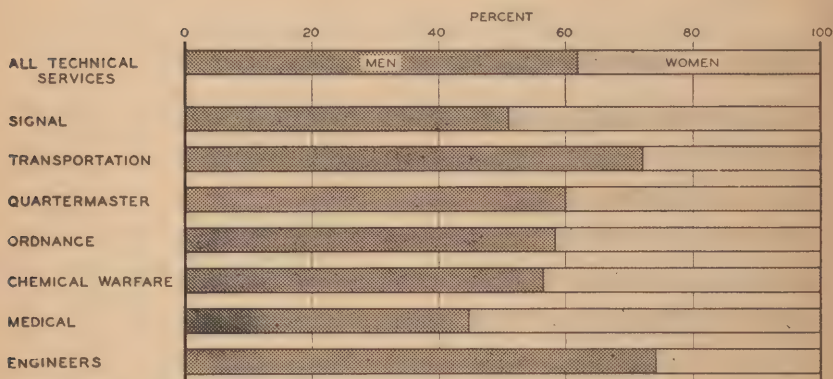
Labor turnover in the Army Service Forces was a serious problem during the fiscal year 1943. The gross separation rate during April, 1943, was 8.7 separations per 100 employees, as compared with a rate 7.69 separations in all manufacturing industries. The great expansion in personnel, both relatively and in absolute numbers, was bound to produce a certain amount of shift until the maximum of employment was reached and the organization shaken down. Those industries characterized by the same rapid war-time expansion as the Army Service Forces experienced separation rates similarly above the general average. The shipbuilding industry for example, showed a separation rate of 10.94 per hundred; the tank industry, a rate of 9.15; and iron and steel foundries a rate of 8.14 per hundred. Moreover, the gross separation rates for nearly half of the major components of the Army Service Forces were less than the average for manufacturing industries.

Many efforts were made to lower turnover as much as possible. Employee counseling and guidance was one of these.

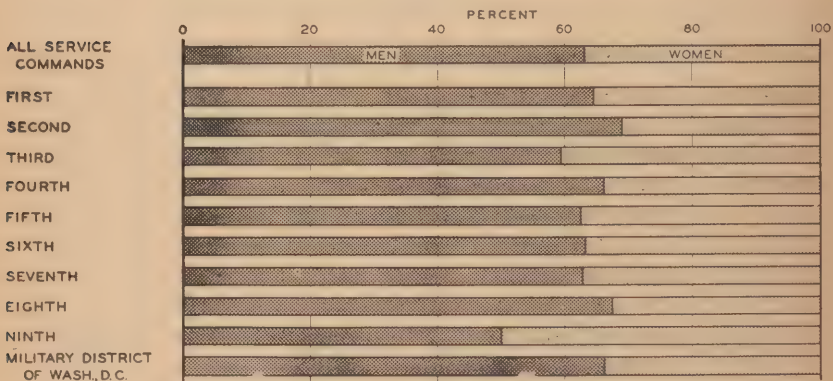
One place where the need for an organized approach to employee problems became evident was the Washington office of the Technical Services and of the Staff Divisions. A large proportion of the new employees were women in their early twenties who were new to Washington, new to the

CHART 84

MEN AND WOMEN EMPLOYEES—BY TECHNICAL SERVICE
1 JULY 1943



MEN AND WOMEN EMPLOYEES—BY SERVICE COMMAND
1 JULY 1943



government, and frequently new to any gainful employment. During the summer and fall of 1942 employee counselors were selected to help orient employees to their responsibilities, to assist in problems of housing, transportation, and recreation, and to provide an extra direct channel of relationship between the office and the workers. The counseling staff, consisting mainly of women, eliminated at the source thousands of petty grievances that might have developed into formal grievances and resignations.

Available data on absenteeism within the Army Service Forces made it clear that inexcusable absence did not present a major administrative prob-

lem. Based upon a sample study for the six-month period from September, 1942, to February, 1943, it appeared that man-days lost from all causes combined amounted to 6.4 percent of the entire number of man-days which would have been worked if no absences had been reported. The average per employee was 10.3 days, of which 4.2 days represented annual leave, 2.9 days sick leave, and 3.2 days without pay. On the assumption that over a period of one year the time taken off per employee had been double that for the six-month sample, absences for all causes would have been more than five days short of the statutory allowance for annual leave alone, and sick leave more than one week short of the statutory allowance for that item.

By the end of the fiscal year 1943 the Army Service Forces finally attained stability in civilian strength. Trained cadres of women were available, and military ineligible men had been placed in strategic positions. The hectic job of expansion was completed, and the job that remained to be done was that of refining and perfecting placement procedures. At the end of the year personnel officials were laying plans for obtaining better basic records on the individual worker, for improving placement and occupational statistics, for defining more carefully lines of promotion, and for providing orderly schedules of replacement for those remaining men who might be drafted.

Program for the More Effective Utilization of Personnel

On March 1, 1943, the Army Service Forces launched a large-scale program to bring about a more effective utilization of all its personnel, both military and civilian. Eight objectives were specified for this program—to develop adequate personnel data; to establish effective personnel control; to replace general service personnel as far as possible by limited service personnel and men by women; to improve the whole program for personnel management; to eliminate non-essential activities; to improve organization structure; to decentralize authority to act; and to improve the general efficiency of operations by the simplification of procedures and the elimination of useless records. These objectives in turn were divided into some 140 specific projects.

All the Service Commands, the Technical Services, and Staff Divisions of Army Service Forces were asked to submit recommendations for elimination of non-essential activities, for decentralization of authority, and for elimination of non-essential records. A total of 2,750 recommendations were received in the Office of the Commanding General—1417 from Service Commands, 1098 from Technical Services and 235 from Staff Divisions. By the end of the fiscal year 1943, some 2000 of these recommendations had been acted upon, of which about 60 percent were approvals. Another 1,821 individual recommendations for elimination of records were received. By the end of the fiscal year nearly 3,000 unduplicated records had been eliminated.

Nearly 4,000 individual studies were set up throughout the Army Service Forces to simplify work procedures. These studies involved a careful analysis of every step performed in the consideration of a routine action such as a personnel appointment—the number of hands through which it went, the action taken at each step, the number of times the paper was transported or

CHART 85

TURNOVER

ASF CIVILIAN DEPARTMENTAL EMPLOYEES

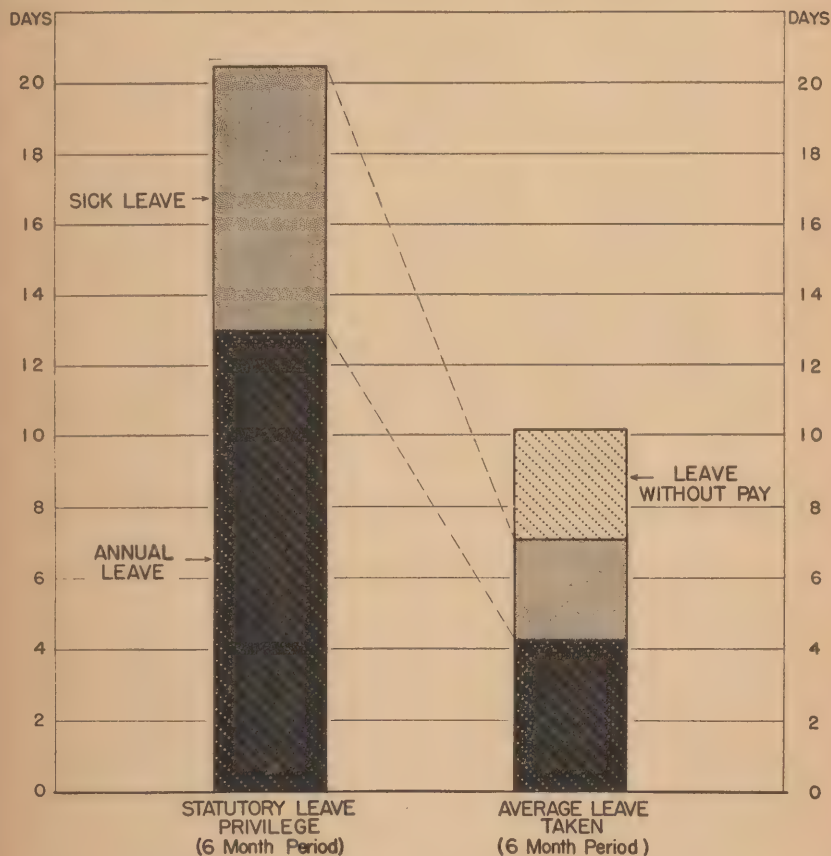
APRIL 1943



CHART 86

COMPARISON OF STATUTORY LEAVE PRIVILEGE AND AVERAGE LEAVE TAKEN PER CIVILIAN EMPLOYEE ASF*

SEPTEMBER 1942 TO FEBRUARY 1943, INCLUSIVE



*Based on sample of approximately 70% of average number on payroll from Sept. 1942 to Feb. 1943, inclusive.

JPD
ASF

held. In each work analysis an effort was made to simplify the whole procedure and to improve the efficiency with which work was performed. By the end of the fiscal year about half of these studies had been completed with an estimated savings of some 6,000 to 7,000 persons.

On March 29, 1943, a Procedures Committee was set up to simplify and standardize procedures for the handling of supplies. This committee was headed by the Chief of Staff of Army Service Forces and had members designated by the Director of Operations, the Director of Materiel, the Chief of Transportation, the Quartermaster General, the Fiscal Director, and the Director of the Control Division. Studies of procedures were made at various

depots and at ports of embarkation. A new single shipping document was developed to replace many different forms previously used at various stages in the shipment of supplies. Much paper work was thereby eliminated. Property accounting procedures were simplified so as to eliminate the preparation, mailing, and filing of about 6,000,000 copies of shipping tickets a month. The preparation, mailing, and filing of about 2,500,000 post cards a month acknowledging the receipt of shipments were eliminated. The property accountability of holding and reconsignment points and of ports of embarkation was abolished, removing at one stroke the need for over 500 clerks. Simplification in property accounting procedure at depots and sales commissaries was expected to reduce personnel requirements by approximately 1,000 more employees.

Mere figures could not indicate the real significance to improved administration lying behind these activities. Procedures that had grown up over a long period of time and that had been applied in war as in peace were replaced by simpler, more efficient practices. The flow of supplies was thereby speeded up, and administrative duties performed more quickly. At the same time, however, perhaps the greatest result was the encouragement to initiative provided by the whole program. Men were asked to question why they performed work a certain way. New ideas were received and given careful attention. Precedent and time-honored practice was not sufficient justification for any procedure.

Finally, the program enabled the Army Service Forces to determine that the time had come to control all personnel closely and to order an actual reduction.

Personnel Control

In June, 1943, the Army Service Forces, cognizant of the increasing shortages in domestic manpower and the growing needs of the Army Ground and Army Air Forces for combat troops, instituted a new system of personnel control to insure the most efficient and economical use of its military and civilian personnel. The plan was the culmination of controls developed since December 1942. There had always been limitations imposed by higher authority upon the number of military personnel available to the A.S.F., but, aside from financial limitations, there were no ceilings on the number of civilian employees in installations outside the Military District of Washington.

The new personnel control system had, as its major objective, the placing of an overall ceiling—military and civilian combined—on the major organizational units of the Army Service Forces. In each instance a total authorization was given and sub-limitations were then placed on the scarcer types of personnel, such as:

- a. Total military
- b. Officers, by number and grade
- c. Warrant officers by number and grade
- d. Nurses
- e. Enlisted men by number, grade, and color

- f. WAC officers and enrolled women, by number and grade
- g. Table of organization units permanently assigned

Ample latitude was provided to insure that military personnel could be replaced by civilian personnel, as long as the total number employed did not exceed the total authorization.

Organizationally, the introduction of this new method of personnel control constituted an important step forward in the decentralization that has been part of the evolution of the Army Service Forces. In the past, Headquarters, Army Service Forces was concerned specifically with detailed authorizations of military personnel to field installations. Headquarters was in the "retail business". Under the new system it went into the "wholesale business" by making allotments to the commanding officers of Staff Divisions, Technical Services, and Service Commands for their total military personnel requirements.

Under the new system it became the responsibility of the Directors of Staff Divisions, the Chiefs of Technical Services, and Service Commanders to sub-authorize their personnel allotments as they saw fit. The responsibility for doing a good personnel job was placed squarely on the Commanding Officers of the major organizational units, but with this responsibility went the necessary power to carry it through. Staff Divisions at Headquarters could no longer dictate to a Service Commander whether he was to use 100 or 150 persons in a particular installation, nor could Headquarters any longer dictate that the installation had to have a Colonel for a commanding officer. It was the responsibility of the Service Commander to decide on the numbers he needed and to assign the best man to the job.

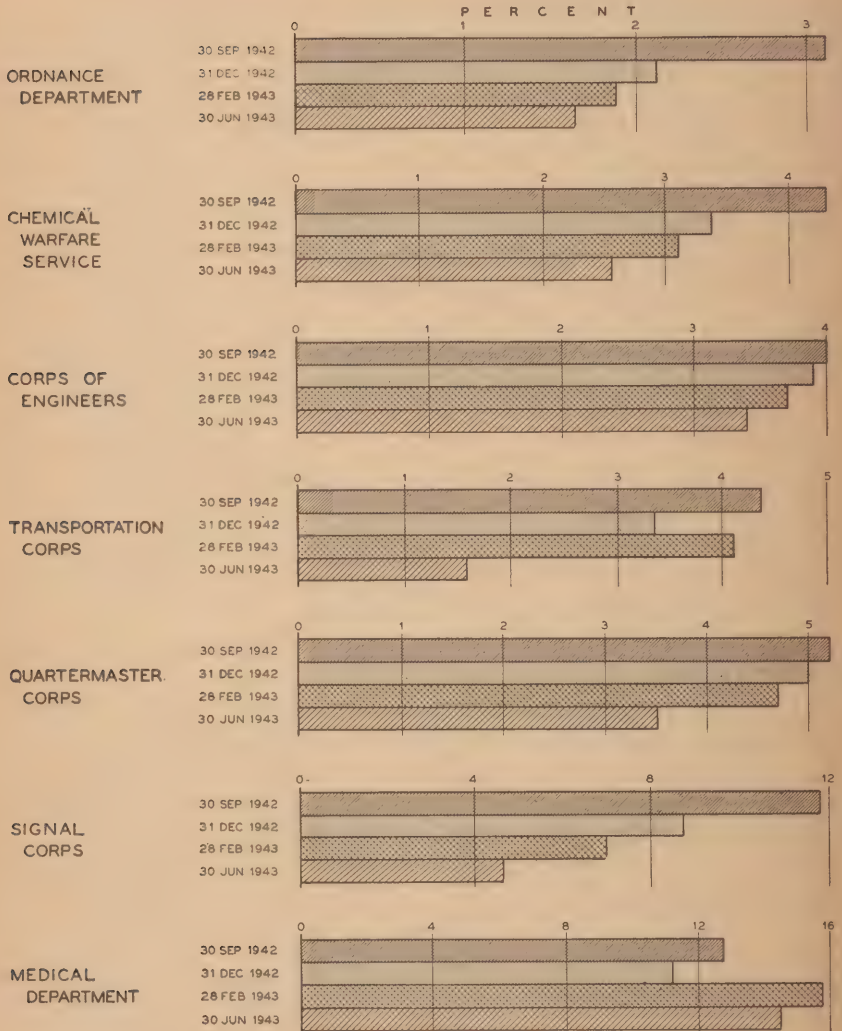
The new method of authorizing personnel emphasized the necessity of still further improving the personnel reporting system of the Army Service Forces. Considerable progress had been made in previous months to differentiate clearly between operating and non-operating military personnel—between military personnel available to do the work and the personnel for whom the work was being done. But there remained a twilight zone which had to be cleared up, especially as regards table of organization units assigned for training in contrast to those assigned for functional purposes. In addition, there was a host of problems connected with civilian personnel categories.

The adoption of a system of bulk allotments and the successful operation under such a system was predicated on measuring the fluctuating work loads of the different organizations in the A.S.F. so as to have a basis for increasing the allotments of organizations which had a great increase in activities while decreasing allotments to organizations with a declining work load. The development of work load indices was a major effort made during the year.

Although the new system of personnel authorizations was not adopted until June 14, 1943 the Commanding General of the Army Service Forces felt sufficiently assured about the advantages inherent in the system to inform the Chief of Staff of the Army that he would cut his rolls by the end of

CHART 87

RATIO OF HEADQUARTERS TO FIELD PERSONNEL A S F TECHNICAL SERVICES



August, 1943, by not less than 105,000 persons. This cut was apportioned among the major organizational units in terms of the best available information concerning their present efficiency in the utilization of personnel and their prospective work load.

Other changes incident to the adoption of the new system was the placing of all civilian employees at A.S.F. (general) depots under the Commanding Officer (Quartermaster) which represented a further step forward toward the establishment of a unified command at all field installations of the Army

Service Forces. Further restrictions were placed upon the use of enlisted men because it was felt that the Army Service Forces should exercise the utmost economy in the use of military personnel and wherever possible substitute civilians for soldiers.

Decentralization

The expansion of all administrative activities under war impetus necessarily resulted in a sizeable increase in personnel located in Washington. The congested living conditions that developed in the nation's capital made it imperative to halt the tendency toward expansion in headquarters personnel.

Under peace-time conditions much work of the War Department was actually conducted in Washington. Thus instead of headquarters being mainly a planning, directing, and inspecting agency, it performed directly many centralized functions. This tendency had to be reversed under war conditions.

During the fiscal year 1943 the Army Service Forces was able to decentralize much of its work out of Washington. By June 30, 1943, best estimates indicated that some 800 officers and about 7,500 civilians stationed in Washington had actually been moved away from the city. The removal of certain activities out of headquarters meant that an additional 7,000 or 8,000 people who would have been needed in Washington were actually employed elsewhere.

Decentralization efforts were of two kinds. In the first place, continuing emphasis was placed upon vesting all operating responsibility upon officials in the field. As procedures were reviewed, unnecessary paper work in Washington was reduced and many actions formerly requiring Washington approval were left to field decision. It was not easy to estimate the net results of these efforts, but it was certain that they played their part in halting and even reversing the tendency towards headquarters expansion.

In the second place, actual administrative and operational activities located in Washington were physically moved to some other city. Numerous examples of this relocation could be cited. The Ordnance Department in September, 1942, created the Tank Automotive Center in Detroit where were concentrated all the administrative activities in tank and automotive procurement and development formerly performed in Washington. The Chemical Warfare Service moved its Technical Division from Washington to Edgewood Arsenal, Maryland, the research center of Chemical Warfare activities. The Transportation Corps moved a large part of its procurement work, formerly centralized in Washington, to Cincinnati. The Signal Corps set up a Storage and Issue agency in Philadelphia to direct warehousing and distribution work, a Ground Signal agency in New York City to direct the operation of the fixed communications system, and an Inspection Agency in Dayton to supervise acceptance of supplies. A Plant Engineering Agency, a Production Engineering Agency, and a Stock Numbering Agency were also created in Philadelphia to do work previously performed in Washington.

The Special Service Division moved much of its writing and publishing activity to New York City; motion picture work was centered in a branch office in Hollywood. The Army Exchange Service was entirely moved to New York City, except for a small liaison office left in Washington. The Adjutant General's Office set up the Office of Dependency Benefits in Newark to administer the Servicemen's Dependents Allowance Act of June 23, 1942. All allotments of pay were handled through that office. Many War Department records held by The Adjutant General's Office in Washington were moved to High Point, North Carolina.

These were instances of actual movement of an activity outside of Washington in order to reduce personnel requirements in that city. The reversal in the tendency toward expansion of A.S.F. personnel in Headquarters and the location of A.S.F. personnel on June 30, 1943 are shown in the accompanying charts.

Reporting

Much effort was devoted during the fiscal year 1943 to the development of a standardized reporting system for the Army Service Forces. Prior to March 9, 1942, various supervisory agencies of the War Department interested in phases of supply and administrative operations requested statistical information more or less haphazardly. Such practice made it impossible to organize reporting activities on a routine basis. The efforts of many people had to be given to providing the data that were requested from time to time. There was no way of anticipating these requests and preparing to meet them.

At the end of the fiscal year 1942 the Statistical Service of Army Service Forces was preparing over 40 recurring reports, and in the course of the year had prepared even more special reports.

During the fiscal year 1943 under the guidance of the Control Division in Headquarters, Army Service Forces, simultaneous attention was given first to standardizing reporting activities, and secondly, to the elimination of non-essential recurring and special reports. The objective of standardization was to place statistical reporting upon a regular periodic basis. All information normally required for operating purposes was to be provided. The report data were to be summarized from basic records that were accurate and current. These records were to be kept in accordance with standard procedures.

At the same time all reports required by Staff Division, by Technical Services, and Service Commands were examined with care to determine the need for them. When certain information was required for operating purposes, the effort was made to provide such data on a standard basis as a part of the regular reporting system of Army Service Forces. Where the data did not serve any useful purpose, the report was eliminated. By the end of the fiscal year real results had been achieved in the elimination of non-essential reports.

Some 2,900 reports and records were discontinued. Nearly 2,200 of these were reports required by the Technical Services. Another 600 were Service

Command reports. One hundred reports required by Staff Divisions of Army Service Forces were eliminated.

At the same time that reports were being standardized, emphasis was placed upon the effective presentation of statistical data. Increased use was made of graphic presentation to summarize data.

Another innovation in statistical reporting introduced during the year was the decentralization of reporting. Before July 1, 1942, statistical reporting of procurement and other operations was centralized in the hands of a single staff agency. Statistics were looked upon as a technique in themselves demanding single operation. During the fiscal year this was changed in order to make statistical reporting more closely a part of administrative operations. Instead of a single agency collecting and presenting statistical data about such varied activities as procurement, distribution, transportation, construction, and personnel, it was determined that the appropriate staff agency responsible for supervising these activities should likewise be responsible for presenting necessary statistical data. A single agency—the Control Division—continued to be the central advisory and guiding agency for the entire Army Service Forces on statistical reporting. It did not itself, however, prepare various statistical reports.

By the end of the fiscal year 1943 the Army Service Forces had developed a single Monthly Progress Report of standard design divided into various sections as the means of providing necessary information about the progress of all activities. This Monthly Progress Report was designed to eliminate unnecessary and overlapping reports and to be comprehensive in scope. At the end of the year the Monthly Progress Report appeared in eleven sections as follows:

Section 1—*Procurement*

A detailed breakdown of forecasts of deliveries for at least one year in advance, together with actual deliveries to the date of the report.

Section 2—*Distribution*

An analysis of the distribution of materiel procured by the Army Service Forces to the recipients—the U. S. Army, International Aid, the U. S. Navy, and other agencies. The amount going into storage was also shown. Section 2-H was devoted to a detailed analysis of storage operations.

Section 3—*Transportation*

This section presented a summary of the shipping situation, ocean traffic during the period of coverage, port conditions, the rail situation, and such special problems as were of current interest.

Section 4—*Construction*

A summary of the location, cost, completion date and capacity of all installations constructed by the Army Service Forces from the inception of the program. Also

Section 5—*Personnel*

included were sections on real estate acquisition and repair cost estimates.

This section presented data on strength of the entire Army and of the Army Service Forces, including the civilian personnel of the latter. Such miscellaneous activities relating to personnel as the wage adjustments made for War Department industrial employees and the progress of the Army Service Forces job-instructor training program were also included in this section.

Section 6—*Analysis*

This Section contained a comprehensive textual and graphic review of all phases of the Army Service Forces program.

Section 7—*Health*

This section presented a general statistical summary of the health conditions of the U. S. Army.

Section 8—*Fiscal*

This section summarized the financial activities of the Army Service Forces.

Section 9—*Military Training*

This section presented pertinent information about the training of Army Service troops.

Section 10—*Special Services*

This section contained a summary of the educational and recreational activities carried on by the Army Service Forces.

Section 11—*Administration*

This section summarized material concerning the operations of such Army Service Forces administrative agencies as the Office of The Adjutant General, the Army Exchange Service, the Judge Advocate General, the National Guard Bureau, and the Provost Marshal General.

XIX

THE SERVICE COMMAND REORGANIZATION

When the Army Service Forces was created, War Department Circular No. 59 on March 2, 1942, provided that the Corps Areas of the War Department should become a part of the new organization. Nothing was said about the responsibilities of the Corps Areas or how they were to fit into the functions assigned to the Army Service Forces. In the initial directive of March 9, 1942, setting up the first organizational structure of the Army Service Forces the statement was merely included that "Corps Areas will function as field agents on designated functions which, until changed by further instructions, are the same functions as those heretofore performed by the Corps Areas."

The National Defense Act as amended on June 4, 1920, had provided that "for purposes of administration, training, and tactical control, the continental area of the United States shall be divided on a basis of military population into Corps Areas." The Act went on to provide that each Corps Area should contain at least one division of the National Guard or of the organized reserves, and such other troops as the President might direct. By General Order No. 50, August 20, 1920, the War Department divided the United States into nine Corps Areas to which were assigned responsibility for tactical training and administrative control of the component units of the Army. The Corps Areas were lineal descendants of the divisions and departments into which the United States had been geographically divided from time to time since 1813. To each Corps Area a division of the Regular Army was assigned, together with a division of the National Guard and a division of the organized reserves to be drawn from the states of the Area.

From time to time throughout the 1920's various field installations of the War Department were exempted from the control of the Corps Area Commanders. These included district procurement planning offices, depots, ports of embarkation, finance offices, the division and district offices of the Corps of Engineers, named general hospitals, and other installations. At the same time the tactical importance of the Corps Areas tended to decline as fixed geographical boundaries proved a disadvantage in planning the tactical training and employment of the Army. On July 26, 1940, a general headquarters of field forces was created, charged with the training of all harbor defense and mobile troops within the continental United States, including General Headquarters, Aviation, and the Armored Force. By War Department letter on October 3, 1940, such field forces as were under the Corps Area Commanders were transferred to the control of General Headquarters. At the same time the field forces were relieved from any responsibility for administration and supply. These duties were grouped under organizational units, designated Service Commands, which were created in each of the Corps Areas. Functions were discharged through station complements provided for permanent camps, posts, and stations. Thus the Corps Areas were

SERVICE COMMANDS



left with little except administrative responsibilities at the time they became a part of the Army Service Forces.

Even in the field of administrative responsibility the work of the Corps Areas was not too clearly defined. Many administrative activities, such as finance, were carried on by direct supervision from Washington rather than through the Corps Areas. Repair and utility operations at posts and camps tended to be controlled directly by the organization of the Chief of Engineers rather than through the Corps Areas. Supply officers in posts and at Corps Area Headquarters likewise looked upon themselves more as belonging to their respective chiefs in Washington than as staff officers of the post or Corps Area Commander.

An investigation into the organization and activity of Corps Area Commanders made by Headquarters, Army Service Forces, in May and June, 1942, revealed two basic defects. In the first place, there was no clear, complete statement to be found in Army Regulations or elsewhere defining the responsibilities entrusted to Corps Area Commanders. Many posts and installations had only a vague relationship to the Corps Area Commanders. Within the boundaries of the Sixth Corps Area alone there were found to be 49 exempted Army installations, many of which were assigned under the reorganization of March 9, 1942, to the Army Service Forces itself. There was confusion in the relationship of the Corps Area Commanders to the four Defense Commands of the War Department. It was clear that most of the problems confronting Corps Area Commanders could be traced to the lack of a well-defined and comprehensive statement of their mission.

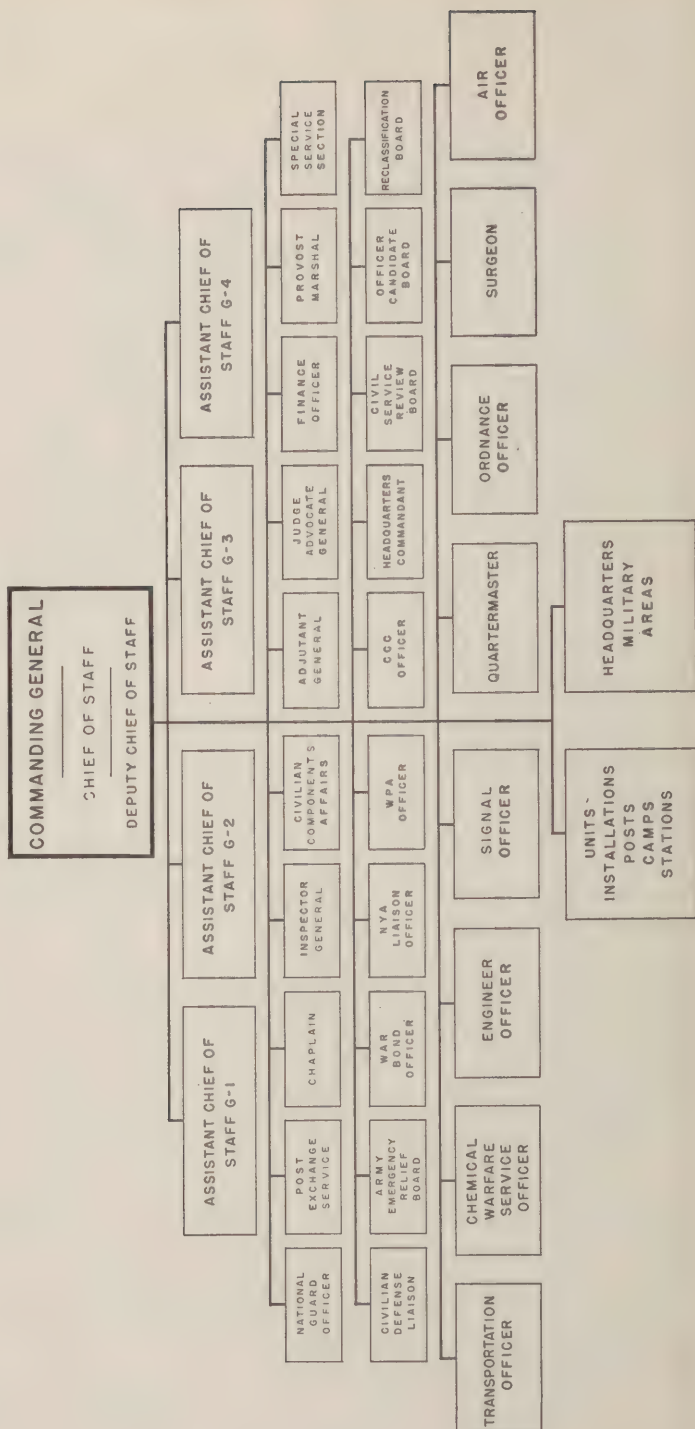
In the second place the organization of Corps Area Headquarters continued to follow tactical lines despite the fact that tactical responsibilities had been removed. One result of this organization was a multiplicity of staff officers reporting to the Corps Area Commander. In the Third Corps Area there were 32 divisions reporting to the Chief of Staff and the Commanding General. The general staff divisions of Corps Area Headquarters performed both planning and operating functions. Relations between general staff officers and special staff officers were not at all clear. In the Sixth Corps Area it was found that six special staff officers had their own civilian personnel sections. There was no uniformity in the recruitment, training, promotion, and separation of civilian personnel. Military personnel matters were likewise handled independently by headquarters staff divisions. In the field of internal security, for example, G-2 and G-3 Divisions, the Corps Area Provost Marshal General, the Corps Area National Guard Officer, and procurement district offices all shared responsibility for some phase of the program. In the Third Corps Area there were nine different offices maintaining fiscal sections, each receiving allotments separately.

At Army camps and posts the same defects in definition of responsibility and internal organization were found to exist.

War Department General Orders No. 35 on July 22, 1942, redesignated the Corps Areas as Service Commands. The new name acknowledged two facts: first, that the Corps Areas had already lost all tactical importance and had only an administrative and supply responsibility; secondly, that it

CHART 89

CORPS AREA HEADQUARTERS



was the intention of the Army Service Forces to make the Service Commands its principal geographical organization.

On the same date a Service Command Organization Manual was issued providing for a common organizational structure of Service Command headquarters and defining the mission of the Service Commands in anticipation of the revision of Army Regulations 170-10 issued on August 10, 1942. The mission of the Service Commands was defined as the performance in the field of all the basic functions of the Army Service Forces except procurement, manufacturing, new construction, depot operation, and the operation of ports of embarkation.

In order further to clarify the relations of Service Command headquarters to War Department installations in the field, these installations were classified into four categories. Class I installations were those under the complete control of the Service Commander. These included recruiting and military personnel procurement stations, induction centers, reception centers, motor repair shops, Ordnance repair shops, Signal Corps repair shops, recreation camps and areas, internal security districts, State Guard affairs, Reserve Officer Training Corps activities, affairs of reserve components including the National Guard not on active duty, general dispensaries (except the general dispensary in Washington, D. C.), and national cemeteries (except Arlington National Cemetery).

In addition, enemy alien and prisoner of war internment camps were transferred from the Provost Marshal General to the Service Commands. The U.S. Army finance offices, except the Army Finance Office at Washington, D. C., were transferred from the Chief of Finance to the Service Commanders. Disciplinary barracks formerly under the Adjutant General were transferred to the Service Commanders. Administrative supervision of general hospitals except Walter Reed General Hospital was transferred from the Surgeon General to Service Commanders. All of these field activities became Class I installations under the control of Service Commanders. The Provost Marshal General, the Chief of Finance, and the Surgeon General became staff officers for the Commanding General Army Service Forces, planning and advising on policies to be directed in the name of the Commanding General and to be executed by the Service Commanders.

Class II installations were Army posts and stations principally utilized by the Army Ground Forces. At these posts the Service Commanders were responsible for the maintenance and operation of post facilities and the requisitioning of supplies to meet the needs of the troops stationed there. In other words the Service Commanders had complete control over the facility itself but no jurisdiction over the troops stationed there for training purposes. Class III installations were air fields and posts of the Army Air Forces under the direct control of the Commanding General, Army Air Forces. The responsibility of the Service Commanders was to render such assistance to those posts as the Commanding Officer of the post might request. In addition, the Service Commander was responsible for certain specific functions which included among other things the audit of property

The organizational chart for the U.S. Army Materiel Command is structured as follows:

- SERVICE COMMANDER**
 - CHIEF OF STAFF**
 - INSPECTOR GENERAL
 - PUBLIC RELATIONS BRANCH
 - CONTROL DIVISION
 - AIR LIAISON
 - ADMINISTRATIVE DIVISION**
 - ADJUTANT GENERAL BRANCH
 - ARMY FINANCE BRANCH
 - FISCAL BRANCH
 - JUDGE ADVOCATE BRANCH
 - U.S. FINANCE OFFICE
 - PERSONNEL DIVISION**
 - CIVILIAN PERSONNEL BRANCH
 - MILITARY PERSONNEL BRANCH
 - W.A.A.C. BRANCH
 - SPECIAL BRANCH
 - CHAPLAINS
 - OFFICER PROMOTIONS BRANCH
 - INDUCTION STATIONS
 - TRAINING DIVISION**
 - SUPPLY AND SERVICE DIVISION**
 - ORDNANCE BRANCH
 - QUARTER MASTER BRANCH
 - ENGINEER BRANCH
 - SIGNAL BRANCH
 - TRANSPORTATION BRANCH
 - ENGINEER BRANCH
 - MEDICAL BRANCH
 - REAL ESTATE, REPAIRS, & UTILITIES DIVISION**
 - INTERNAL SECURITY DIVISION**
 - INTELLIGENCE DIVISION**
- POST COMMANDER EXECUTIVE OFFICER**
 - MILITARY BATTALIONS
 - SECURITY DISTRICTS
 - PUBLIC RELATIONS
 - ADMINISTRATIVE
 - PERSONNEL
 - TRAINING
 - SUPPLY AND SERVICE
 - INTERNAL SECURITY
 - NURSE
 - ENGINEER
 - INTELLIGENCE

FIELD INSTALLATIONS

accounts, the operation of laundries, personnel investigative functions, special service activities, repairs and utilities, disbursement activities, and fixed signal communications.

Class IV installations were field offices of the Army Service Forces exempt from the control of Service Commanders. These included procurement district offices, depots, ports of embarkation, and proving grounds. At these installations the Service Commander performed the same duties as he did for Army Air Forces posts.

The division of field installations into four categories was a definite step forward in clarifying the responsibilities of Service Commanders in the field. Difficulties continued to be encountered in actual relationships between Service Command headquarters and Class III and Class IV installations. These had to be ironed out from time to time as they occurred. Nonetheless, the division of field activities into these broad categories helped to identify the nature of the difficulties as they arose.

The various headquarters staff offices of the former Corps Areas were consolidated into seven divisions under each Service Commander—administration; personnel; supply; real estate, repair, and utilities; operations and training; internal security; and intelligence. In the immediate office of the Service Commander were a Chief of Staff, an Inspector General, a Control Branch, and a Public Relations Branch. The number of people reporting directly to a Commanding General was reduced from an average of 30 to 11. The responsibilities of each of these divisions were of three types: first, planning, policy-making, and staff supervision of their respective functions throughout the entire Service Commands; second, the actual execution of certain operations within the Service Command headquarters; and third, the execution of specific operating functions in the field.

The new headquarters organization for Service Commands integrated general staff and special staff offices. The Administrative Division included the Adjutant General, the Judge Advocate, and Finance activities. The Personnel Division was a combination of a former G-1 Division and all other civilian and military personnel matters, including Chaplains and Special Service activities. The Director of the Supply Division had Ordnance, Quartermaster, Signal, Medical, Engineer, Chemical Warfare, and Transportation branches under him in addition to an Army Exchange Branch. The Real Estate, Repairs, and Utilities Division handled the purchase and leasing of land and the contracting for or operation of utility services and the maintenance of physical facilities previously under the control of the Chief of Engineers. The Operations and Training Division handled training of Army Service Forces units. The Internal Security Division handled internal security and investigative functions formerly under the control of the Provost Marshal General. And the Intelligence Division performed activities within the United States as directed by Military Intelligence Service of the War Department General Staff.

Army posts were expected to organize their activities along the same lines as those prescribed for Headquarters of the Service Commands.

The Director of Real Estate, Repairs, and Utilities on the staff of Service

Commanders was to be the Division Engineer named by the Chief of Engineers. In all real estate, repair, and utilities activities, however, the Division Engineer functioned under the command of the Service Commander. The Chief of Engineers in Washington was the staff advisor to the Commanding General, Army Service Forces, in setting general policies and procedures to be carried out in the field. Subsequent to July 22, 1942, the Chief of Engineers redrew division boundary lines to make them coterminous with boundary lines of Service Commands, thereby reducing the number of Division Engineers to nine, plus Division Engineers in the Upper and Lower Mississippi Valley.

To strengthen the authority granted to Service Commanders, a change was made in the system of allotting funds to their headquarters. In the past, for example, it had been the practice for the Chief of Ordnance to make allotments to the Ordnance Officer in a Corps Area headquarters. After July 22, all funds for all activities under the responsibility of the Service Commander were allotted directly to him rather than to any subordinate division. In this way the position of the Service Commander as directing head of field activities was emphasized and the staff relationship between Ordnance officers in Service Command headquarters and the Chief of Ordnance was made clear.

A conference of Commanding Generals of the Service Commands was called by the Commanding General of Army Service Forces to meet in Chicago the last of July, 1942, to discuss the new organization. At this conference the purpose of the Service Command reorganization was explained, questions were answered, and problems were anticipated. Another conference was held in New Orleans in December, 1942, in order to check six months of progress under the new arrangements. In general it was clear by that time that the Service Commands were realizing the original intention to make them the major field organization of the Army Service Forces.

In August, 1942, the Military District of Washington became the Service Command for installations within its geographical limits. The district was originally created in May, 1942, under the Eastern Defense Command to assume responsibility for defensive measures in the District of Columbia, Arlington County, Alexandria, and portions of Maryland. In August the Military District was removed from the Third Service Command. The Commanding General of the district reported to the Eastern Defense Command on his defense missions, to the Deputy Chief of Staff of the War Department for his responsibilities as Army Headquarters Commandant, and to the Commanding General of the Army Service Forces on administrative and supply functions. The area of the Military District of Washington was enlarged on December 9, 1942, to include Fairfax County in Virginia, and Montgomery, Prince Georges, and a part of Charles Counties in Maryland. This brought Fort Belvoir in Virginia and Fort Washington in Maryland under the Military District.

An additional Service Command was created by War Department General Orders No. 44, September 10, 1942. Designated the Northwest Service Command, the new Command had its headquarters at Whitehorse, Yukon

Territory, Canada. Combined under its control were all activities in the Army in the provinces of British Columbia and Alberta and in the territories of Yukon and Mackenzie, Canada. The principal responsibility was the operation of the Alcan Highway and the White Pass and Yukon Railway and base installations in Skagway and Fairbanks, Alaska. The Northwest Service Command also provided supplies to airfields in the area. Headquarters were established on October 5, 1942.

The Army Service Forces considered the reorganization of July 22, 1942, not a final step in the decentralization of administrative responsibility to Service Commands, but a beginning. Continuing attention was given to various possibilities of increasing the responsibility entrusted to Service Commanders. Of some 112 proposals submitted by Service Commanders themselves for decentralization of authority to them, 60 were approved and effected by December 31. For example, approval of construction projects costing less than \$10,000 was placed in the hands of Service Commanders rather than in the hands of the Chief of Engineers; the latter, in the name of the Commanding General, fixed policies governing the approval of such projects. On October 1, 1942, five depots established by The Adjutant General were made Class I installations under the administrative control of Service Commanders. Field offices of the Officer Procurement Branch of The Adjutant General's Office were turned over to the Service Commands on September 1, 1942.

A complete revision of Army Regulations 170-10 was published on December 24, 1942. Service Commanders were given the responsibility for supervising salvage, packing, and shipping activities at Army Air Forces installations and also the activities of the Women's Army Corps there. In addition, a number of installations formerly in Class IV were transferred to Class I. These included civilian defense schools, salvage and reclamation facilities, detention and rehabilitation centers, replacement depots, various medical units, and state selective service detachments.

The mission of the Service Command was enlarged to include inspection of training activities at exempted Class IV installations. The supply responsibility was enlarged to include close supervision of post supply activities and the prompt reporting and return of excess stocks to depots.

Zone transportation officers were attached to the staffs of Service Commanders in January, 1943, in an effort to avoid duplication between zone and Service Command transportation activities. In addition to their duties as zone officers, they were charged with staff supervision of all Service Command transportation matters. Service Command duties were to be performed under the command of a Service Commander; zone activities under the command of the Chief of the Transportation Corps. To replace field liaison officers of the Labor Branch of the Industrial Personnel Division, Headquarters, ASF, Labor Branches were established in the headquarters of each Service Command on January 26, 1943. These branches supervised labor supply and labor relations activities of the War Department with War Department contractors. Field activities in connection with the Army Specialized Training Program were assigned to the Service Commands on

February 18, 1943. This included the negotiation of contracts with educational institutions and the selection and assignment of trainees. The administrative processing of tort claims against the government was decentralized to Service Commanders on April 23, 1943. The Judge Advocate General in Headquarters was responsible for staff supervision of this activity.

In the original assignment of authority, the Service Commands were given responsibility for replacement training centers, unit training centers, and schools of the Army Service Forces except for the promulgation of training doctrine and programs, the conduct of training, and the selection, assignment, and relief of training staff personnel. In practice the exceptions proved in effect to leave administrative responsibility for training largely in the hands of the Chiefs of Technical Services and Staff Divisions of Army Service Forces rather than in the hands of Service Commanders.

When Army Regulations 170-10 were revised on December 24, 1942, the Service Commanders' responsibility for training was more narrowly restricted to administrative, supply, and similar functions at training centers and schools of the Army Service Forces. The Commanding General of Army Service Forces retained authority to promulgate training doctrine, to schedule programs, and supervise training, to select, assign and relieve training staff and faculty personnel. On these subjects the Chief of a Technical Service or of a Staff Division was authorized to deal directly with any school. A copy of the correspondence had to be furnished the Commanding General of the Service Command in which the school was located. All correspondence not relating to training doctrine, the scheduling of programs, and the supervision of training and faculty personnel was to be directed to the Commanding General of the Service Command.

Change No. 5 to Army Regulations 170-10 on May 12, 1943, broadened the scope of Service Command responsibility for training activity, exempting from its jurisdiction only the promulgation of training doctrine, the establishment of student quotas, and the preparation of training programs. At the same time certain schools of the Army Service Forces were classified as Class IV installations completely removed from the responsibility of Service Commands. The schools placed in this category were the School of Military Government, Edgewood Arsenal, Camp Lee, Aberdeen Proving Ground, Ft. Monmouth, Camp Murphy, and Carlisle Barracks.

Since training activities of the Army Service Forces were conducted at various posts throughout the United States, frequently in conjunction with other activities at such posts, it was desired to bring this training under the single responsibility of Service Commands. On the other hand, since the Chiefs of Technical Services and Directors of Staff Divisions, such as the Provost Marshal General, were responsible for the content of this training, their offices had to retain direct relationships with training units. In consequence, by the end of the fiscal year the general division of responsibility for training, apart from the promulgation of training doctrine, was to place ASF training units under Service Commands except when training units were located at Class IV installations. Certain other special schools were also exempt.

The size of the responsibility entrusted to the Service Commands can best be illustrated by a few figures. The total number of War Department installations located in the Service Commands within the United States was about 3,000. There was housing capacity at Service Command installations for more than 3,000,000 troops. All of these were supplied through post commanders under the Service Commands. In addition, the Service Commands did some work for over 1,600,000 Air Force troops scattered throughout the United States. The repair and utility bill for a year at field installations was in excess of \$300,000,000.

There were about 450,000 hospital beds available at posts and stations under the jurisdiction of Service Commands. During the fiscal year 1943 Service Commanders were responsible for the induction and reception of 3,500,000 inductees and enlistees. Service Commanders were responsible for the security of some 15,000 industrial plants. They supervised about 1,600 fixed communications centers. They operated some 6,000 post exchanges and branches with a monthly gross sale of \$70,000,000. They supervised about 800 schools and R.O.T.C. units of the Army Service Forces.

To the Service Commanders and their subordinate camps, posts, and stations fell the brunt of the administrative activities performed by the Army Service Forces.

XX

SOME CONTRASTS BETWEEN WORLD WAR I AND WORLD WAR II

June 30, 1943, marked the completion of nearly 19 months of war for the United States against the Axis nations. A comparable period of time elapsed between the declaration of war against Germany on April 6, 1917, and the Armistice on November 11, 1918. In other words, by June 30, 1943, the United States had been at war for as long a period as the entire length of our successful participation in World War I.

The two periods of time afford some spectacular contrasts to illustrate how different were the conditions of the present war.

At the time of the declaration of war in April, 1917, the United States had an army of 200,000 men. On December 7, 1941, the United States had an army of over 1,600,000 men. At the end of the first World War the United States in 1918 had an army of 3,630,000. In the 19 months from December, 1941, to June 30, 1943, the army increased from 1,600,000 to over 7,000,000. One year after the declaration of war in 1917 the United States Army was about the same size as the Army on December 7, 1941. In the last 7 months of American participation in World War I the United States Army was increased by 2,000,000 men. The Army increased by 4,000,000 men in the fiscal year 1943.

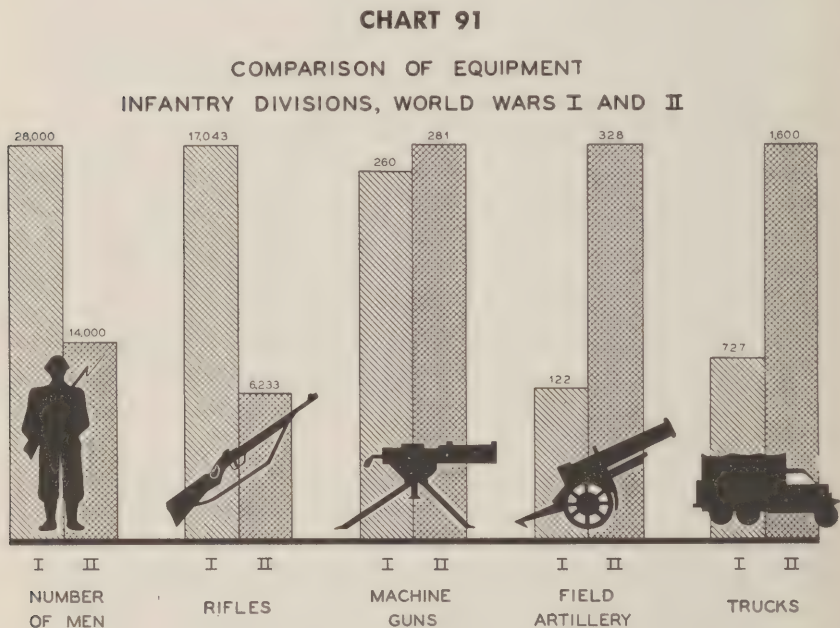
One year after the declaration of war in 1917 the United States had 329,000 men in France. After one year of participation in this war, the United States Army had 1,000,000 overseas. Then in April, 1918, the British Government began to make large numbers of vessels available for the transport of American troops to France. In 7 months an army of one and a half million men was transported to France, so that by the time of the Armistice on November 11, 1918, 2,000,000 soldiers were overseas. About 50 percent of American troops arriving in Europe during the first war were carried there under the British flag. Only 43.7 percent of American troops arrived in Europe on American vessels. On June 30, 1943, over 1,500,000 American soldiers were overseas. Most of these troops and virtually all of their supplies had been transported by vessels under the American flag.

The problems of shipping American troops overseas have been far different in this war from those of World War I. There was but a single destination for the soldiers of the American Expeditionary Forces in 1918—France. The distance from ports of the Atlantic Seaboard across the Atlantic was some 3,000 miles. At the terminus were to be found fairly well-developed ports removed from the front lines and free from enemy fire. The unloading of men and supplies could proceed without interruption. In this war it has been necessary to transport American troops all over the world. Instead of 3,000 miles to ports of debarkation, American soldiers and supplies have

been sent by sea 6,000 miles to the South Pacific and even 12,000 miles around the Cape of Good Hope to the ports of India and the Persian Gulf.

In the first World War the initial movement of one soldier with his equipment required an average of 2.71 shipping tons. In the present war the shipping requirements for the movement of one man to an overseas destination up to June 30, 1943 averaged 7 tons. In other words, over twice as much shipping capacity has been required to move one soldier and his equipment in this war as was required in World War I.

The supply requirements of the American Army in World War II were very different from those of World War I. An infantry combat division



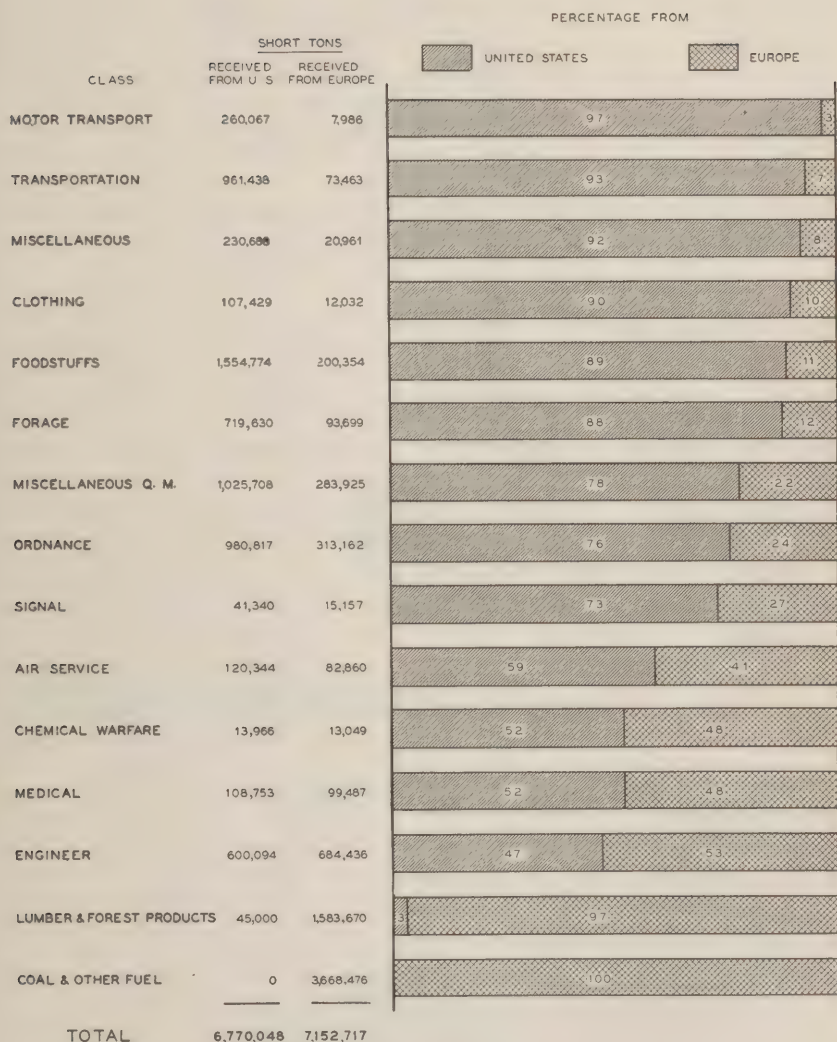
as organized in January, 1918, had an aggregate strength of nearly 28,000 men. An infantry combat division in World War II numbered 15,000 or even fewer men. The armament requirements, however, were in reverse proportion. An infantry division in the first World War carried 122 field artillery pieces, from 37 mm. to 155 mm. An infantry division in World War II, with half as many men, carried 328 field artillery pieces. An armored division had over 1,000 pieces of field artillery. In the first World War an infantry division had 260 caliber .30 machine guns and no caliber .50 machine guns. With half as many men, an infantry division in World War II carried 162 caliber .30 machine guns and 119 caliber .50 machine guns, or a total of 281 machine guns. An armored division had nearly 3000 caliber .30 and caliber .50 machine guns. In World War I an infantry division had 627 motor trucks and mule-drawn carts and wagons for its supply and essential transportation. With half as many men, an infantry division in World War II had over 1,600 motor trucks.

CHART 92

A E F PROCUREMENT

UNITED STATES AND EUROPE

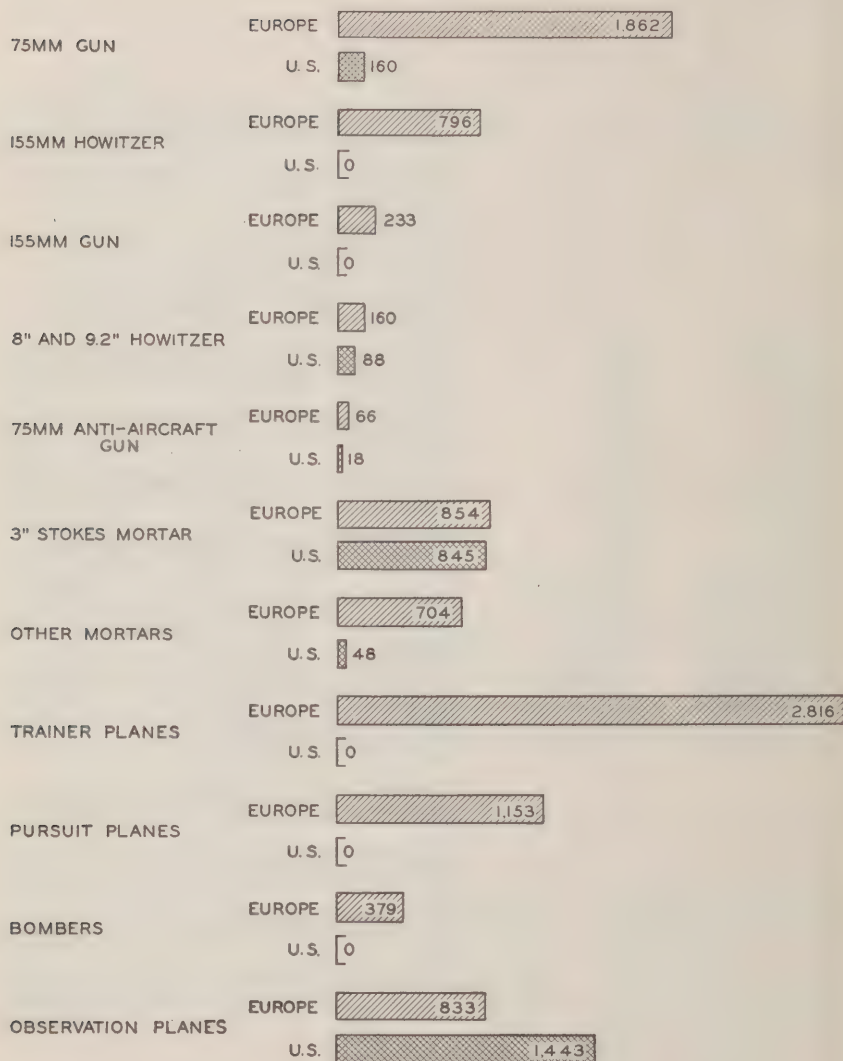
1917 - 1919



In the first World War there was no such thing as an armored division. In World War II the equipment of an armored division included 158 light tanks, 232 medium tanks, 724 half-track cars, and about 2,700 trucks.

When contrast in equipment like these are doubled—the Army in 1943 being twice the size of the American Army in 1918—the differences in procurement and supply between World War I and World War II may be partly appreciated. The problems of supply have been even further complicated by the advance in technological knowledge since 1918.

CHART 93
SOURCE OF SUPPLY
AMERICAN EXPEDITIONARY FORCES
1917 - 1919



Few persons realize to what a large extent the American Army overseas in 1918 depended upon England and France for its supply. On a tonnage basis, 51 percent of all supplies received by the American Expeditionary Forces from 1917 to 1919 came from Europe and only 49 percent from the United States. The tonnage breakdown by type of supply is shown in the accompanying chart.*

* These data have been taken from an unpublished manuscript "Some Accomplishments of the Services of Supply" prepared by the Statistics Branch in Headquarters, Services of Supply, American Expeditionary Forces, May, 1919.

For particular types of supplies, especially for heavy ordnance and air-planes, the American Expeditionary Forces were dependent almost entirely upon English and French supply. Of the 75mm. guns used by the A.E.F., 1,862 were obtained from England and France and only 160 from the United States. The entire 796 155mm. howitzers of the A.E.F. were obtained from overseas, as were the 233 155mm. guns. Of the 75mm. anti-aircraft guns, 66 came from England and France and 18 from the United States. Of the 3" Stokes mortars, 854 were provided by England and France and 845 by the United States. For other mortars, 704 came from England and France and 48 from the United States. The entire number of 2,816 trainer planes used by the A.E.F. were provided by England and France. The 1,153 pursuit planes came from our Allies, as did also 379 bombers. The only planes produced by the United States and shipped to France during the last war were observation planes, of which 1,443 were received by the A.E.F. in contrast with 833 provided by our Allies.

By June 30, 1943, the Army Service Forces had procured 42,000 tanks; only 80 tanks were delivered to the War Department by November 11, 1918.

During 19 months of World War II nearly 75,000 pieces of artillery were manufactured and bought by the Army Service Forces; for the same period in World War I 3,300 pieces of artillery were delivered. More than one million machine guns and nearly 4 million rifles were produced and delivered by June 30, 1943; by November 11, 1918, some 180,000 machine guns and 2½ million rifles had been delivered. The purchase of 900,000 trucks in World War II up to June 30, 1943, was 18 times the number provided in World War I.

Industrially, the United States was better prepared for World War II than it was for World War I. And in the intervening years American industrial might and technological skill had increased severalfold.

American participation in World War I meant primarily a contribution of manpower to the Allied cause. The armies of France and England by the spring of 1918 had suffered serious losses in manpower in the trench warfare of the Western Front. It was for that reason that such large numbers of men were shipped to France in the summer and fall of 1918, to be supplied largely by England and France. The Assistant Secretary of War in World War I wrote, "The war taught us that America can organize, train, and transport troops of a superior sort at a rate which leaves far behind any program for the manufacture of munitions. It upset the previous opinion that adequate military preparedness is largely a question of trained manpower." *

The period of actual hostility from April 6, 1917, to November 11, 1918, was a period in the United States of laying the foundations for a munitions industry. The potential output of American industry would have been realized in 1919 and 1920 if the war had continued through those years.

* Benedict Crowell, *America's Munitions, 1917-1918* (Government Printing Office, 1919), pp. 17-18.

"The experience of 1917 and 1918 was a lesson in the time it takes to determine types, create designs, provide facilities, and establish manufacture." **

The total expenditures by the War Department from April, 1917, to April, 1919, were about 14 and a quarter billion dollars.* In the period from December 7, 1941, to June 30, 1943, expenditures by the War Department were more than 50 billion dollars.

These contrasts are sufficient to indicate how different were the conditions of April, 1917, to November, 1918, from those of December, 1941, to June, 1943. The two wars had little in common.

** *Ibid.*

* Leonard P. Ayres, *The War with Germany* (Government Printing Office, 1919), p. 131.

ARMY SERVICE FORCES

KEY PERSONNEL

30 JUNE 1943

Commanding General LIEUTENANT GENERAL BREHON SOMERVELL
Chief of Staff MAJOR GENERAL W. D. STYER

OFFICE OF THE COMMANDING GENERAL

Deputy Chief of Staff for Service Commands MAJ. GEN. GEORGE GRUNERT
Executive for Service Commands BRIG. GEN. PHILIP HAYES
Control Division BRIG. GEN. C. F. ROBINSON
Technical Information Division MR. HARRY M. SHACKLEFORD
Succeeded Col. Kilbourne Johnston on 1 June 1943, who succeeded Lt. Col. Karl
Detzer on 27 February 1943.
Intelligence Division COL. JAMES M. ROAMER

TECHNICAL SERVICES

The Quartermaster General MAJ. GEN. EDMUND B. GREGORY
The Chief of Ordnance MAJ. GEN. LEVIN H. CAMPBELL, JR.
The Chief of Engineers MAJ. GEN. EUGENE REYBOLD
The Chief of Chemical Warfare Service MAJ. GEN. WILLIAM N. PORTER
The Chief Signal Officer MAJ. GEN. HARRY C. INGLES, ACTING
Succeeded Maj. Gen. Dawson Olmstead, whose retirement was effective 30 June 1943.
The Surgeon General MAJ. GEN. NORMAN T. KIRK
Succeeded Maj. Gen. James C. McGee on 1 June 1943.
The Chief of Transportation MAJ. GEN. CHARLES P. GROSS

SERVICE COMMANDS

First MAJ. GEN. SHERMAN MILES
Second MAJ. GEN. T. A. TERRY
Third MAJ. GEN. MILTON C. RECKORD
Fourth MAJ. GEN. WILLIAM BRYDEN
Fifth MAJ. GEN. FRED C. WALLACE
Succeeded Maj. Gen. Daniel L. Van Voorhis on 2 July 1942.
Sixth MAJ. GEN. HENRY S. AURAND
Succeeded Maj. Gen. George Grunert on 4 September 1942.
Seventh MAJ. GEN. FREDERICK E. UHL
Eighth MAJ. GEN. RICHARD DONOVAN
Ninth MAJ. GEN. KENYON A. JOYCE
Northwest BRIG. GEN. JAMES A. O'CONNOR
Military District of Washington MAJ. GEN. JOHN T. LEWIS

STAFF DIVISIONS

Director of Personnel BRIG. GEN. JOE N. DALTON
Military Personnel Division BRIG. GEN. R. B. REYNOLDS
Succeeded Brig. Gen. James E. Wharton on 19 September 1942.
Industrial Personnel Division MR. JAMES P. MITCHELL
Director, W. A. A. C. COL. OVETA CULP HOBBS
Officer Procurement Service BRIG. GEN. C. H. DANIELSON

Chief of Chaplains BRIG. GEN. WILLIAM H. ARNOLD
Special Service Division BRIG. GEN. F. H. OSBORN
Army Specialized Training Division COL. HERMAN BEUKEMA
Director of Military Training BRIG. GEN. WALTER L. WEIBLE
 Succeeded Brig. Gen. Clarence R. Huebner on 31 March 1943.
Director of Operations MAJ. GEN. LEROY LUTES
 Deputy Director BRIG. GEN. F. A. HEILMAN
 Planning Division COL. C. B. MAGRUDER
 Stock Control Division COL. ROBERT A. CASE
 Storage Division COL. ALBERT B. DRAKE
 Maintenance Division COL. WILLIAM S. CONROW
 Mobilization Division COL. CHARLES E. DISSINGER
Director of Materiel MAJ. GEN. LUCIUS D. CLAY
 Requirements Division BRIG. GEN. WALTER A. WOOD, JR.
 Purchases Division BRIG. GEN. ALBERT J. BROWNING
 Production Division BRIG. GEN. HUGH C. MINTON
 International Aid Division BRIG. GEN. BOYKIN C. WRIGHT
 Relieved Col. John B. Franks, Acting Director, on 22 March 1943.
Fiscal Director MAJ. GEN. ARTHUR H. CARTER
 Chief of Finance MAJ. GEN. HOWARD K. LOUGHRY
Director of Administration MAJ. GEN. JAMES L. COLLINS
 Succeeded Maj. Gen. George Grunert, who was Chief of Administrative Services
 from 29 September 1942 to 15 May 1943. Maj. Gen. John P. Smith was Chief
 of Administrative Services from 1 July 1942 to September 1942.
 Deputy Director BRIG. GEN. MADISON PEARSON
 The Adjutant General MAJ. GEN. JAMES A. ULIO
 The Judge Advocate General MAJ. GEN. MYRON C. CRAMER
 The Provost Marshal General MAJ. GEN. ALLEN W. GULLION
 Army Exchange Service BRIG. GEN. JOSEPH W. BYRON
 National Guard Bureau MAJ. GEN. JOHN F. WILLIAMS
 Executive for Reserve and R. O. T. C. Affairs BRIG. GEN. E. W. SMITH

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